DOCUMENT RESUME

ED 294 975 UD 026 207

AUTHOR	Abrahamse, Allan F.; And Others
TITLE	Beyond Stereotypes. Who Becomes a Single Teenage Mother?
INSTITUTION	Rand Corp., Santa Monica, Calif.
SPONS AGENCY	Department of Health and Human Services, Washington, D.C.; National Inst. of Child Health and Human Development (NIH), Bethesda, Md.
REPORT NO	ISBN-0-8330-0832-3; RAND-R-3489-HHS/NICHD
PUB DATE	Jan 88
GRANT	DHHS-APR000912; NICHHD-P50-HD12639
NOTE	101p.
AVAILABLE FROM	The RAND Corporation, Publications Department, 1700 Main St., Santa Monica, CA 90406-2138 ($7.50).
PUB TYPE	Reports - Research/Technical (143) -- Information Analyses (070)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Academic Ability; Adolescents; Blacks; *Early Parenthood; Economic Factors; Family Planning; *Females; High Schools; High School Students; Hispanic Americans; Individual Differences; Intelligence Differences; One Parent Family; Parent Child Relationship; Peer Influence; *Pregnant Students; *Racial Differences; Religious Differences; Social Cognition; *Social Differences; Socioeconomic Status; Unwed Mothers; Whites

ABSTRACT

Analyzing data from the High School and Beyond survey on the behavior of 13,000 high school sophomore women over a two-year period, this document reveals the following facts about single motherhood: (1) young women with different background profiles exhibit markedly different rates of single parenthood; (2) because teenage women who become single mothers are a highly diverse population, not all are equally responsive to the same forms of social control; (3) background factors influencing single motherhood are race/ethnicity, academic ability, socioeconomic status, parenting, religious commitment, willingness, problem behavior, and opportunity costs; (4) distinct forms of social restraint predominate for Blacks, Whites, and Hispanics: close parental supervision for Blacks, high-quality parent relationship for Whites, and religious commitment for Hispanics; (5) the individual teenager's own awareness and perception of what she would stand to lose by becoming an early, unwed mother can act as a powerful deterrent; and (6) the influence of school peers exists only among Whites. Data are presented on 43 tables and figures. Appendices describe the construction of the analysis file, controlling for background and ability differences among individuals, and the derivation of other variables. An eight-page list of references is included. (BJV)

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Beyond Stereotypes

Who Becomes a Single Teenage Mother?

Allan F. Abrahamse, Peter A. Morrison, Linda J. Waite

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The research described in this report was supported by the U.S. Department of Health and Human Services, Grant No. APR000912; and by the National Institute of Child Health and Human Development, Grant No. P50-HD12639.

Library of Congress Cataloging in Publication Data

Abrahamse, Allan F.
Beyond stereotypes.

"January 1988."
"R-3489-HHS/NICHD."
Includes bibliographical references.
1. Adolescent mothers—United States.
2. Unmarried mothers—United States. I. Morrison, Peter A. II. Waite, Linda J. III. Title.
HQ759.4.A315 1987 362.8'392'088055 87-32393
ISBN 0-8330-0832-3

The RAND Publication Series: The Report is the principal publication documenting and transmitting RAND's major research findings and final research results. The RAND Note reports other outputs of sponsored research for general distribution. Publications of The RAND Corporation do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published by The RAND Corporation
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138

R-3489-HHS/NICHD

Beyond Stereotypes

Who Becomes a Single Teenage Mother?

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Linda J. Waite

January 1988

Supported by
The U.S. Department of Health and Human Services
The National Institute of Child Health and
Human Development

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RAND'S POPULATION RESEARCH CENTER

The Population Research Center was established in 1979 to advance the basic research aims of its sponsoring agency, the National Institute of Child Health and Human Development. The Center strengthens and focuses academic population studies within RAND's broader problem-solving environment.

PREFACE

This report was prepared under an Adolescent Family Life Research Grant from the Department of Health and Human Services. The research has drawn on core services supported by a grant awarded to RAND's Population Research Center by the National Institute of Child Health and Human Development. The study is part of the Center's ongoing inquiry into the demography of American families.

Authors of this report are listed alphabetically. Each contributed equally to this research.

SUMMARY

In recent years, the single teenage mother has become a matter of national concern—and for good reason. In 1985, for example, 280,000 of the unmarried women younger than 20 in this country gave birth. These births accounted for 7 percent of the national total and 34 percent of births to single women. Further, a great many more teenagers become pregnant each year, but most end their pregnancies in abortion or marry before the child is born.

The high level of teen fertility outside of marriage has elicited various explanations and proposals for prevention efforts, invariably reflecting assumptions about the "kind" of girl who becomes a single mother, what is "wrong" in her world, and what will "set it right." The research reported here indicates that the public debate over efforts to reduce single teen childbearing must get beyond generalizations based on these assumptions before effective prevention programs can be developed.

Although a girl's chances of becoming a single teenage mother depend on a set of individual and family characteristics, those chances are not fixed. They can be modified, sometimes substantially, by certain other influences that we have identified. However, the strength of these influences varies enough across racial and ethnic groups to make generalizations about the nature of single teen mothers very questionable grounds for developing preventive efforts. Our findings suggest that programs aimed at lowering teen fertility need to be tailored to specific groups of girls, reflecting the particular characteristics and influences that affect them most.

This report concentrates on three broad questions:

- What background characteristics determine teenagers' risk of becoming single mothers?
- Do family and religious influences temper those risks?
- What other kinds of influences may further modify risks?

We derive answers to these questions from a statistical analysis of a large, nationally representative panel of 13,000 contemporary high school sophomore women. (These data are part of the ongoing *High School and Beyond* (*HS&B*) Panel, surveyed by the National Center for Education Statistics.) We follow these school-age women as they mature through their 16th, 17th, and 18th years, comparing the ones who form single-parent families with those who do not. From these

thousands of individual experiences, we can generalize statistically about the factors within the individuals themselves, their families, and society that predisposed some to become single parents and spared others.

To address the first question, we have to account for the diversity in the backgrounds of these young women. Those differing profiles alone place certain ones at substantially higher risk than others. To quantify background effects, we developed a "parenthood risk" scale to estimate an expected risk based on each individual's race or ethnicity, academic ability, and the socioeconomic status (SES) and structure of her parental family. Our analysis shows that young women with different background profiles exhibit markedly different rates of single parenthood over the two-year period they were tracked. Rates vary from as low as one in a thousand (for high-ability, high-SES white respondents in intact families) to as high as one in four (for low-ability, low-SES black girls from female-headed families).

Other less immutable factors can affect the rates relative to these baseline levels. The most powerful factors uncovered pertain to: (1) parenting, (2) religious commitment, (3) the young woman's own willingness to bear a child out of wedlock, (4) the willingness of her school peers, (5) the "problem behavior" constellation, and (6) the opportunity costs of unwed childbearing. The first two influences reflect a set of social restraints that emanate from family and church and whose intensity may vary among individuals. The others are influences that may either reinforce or undermine these controls at home.

Parenting:

- High quality of the parent-child relationship is consistently associated with lower than expected rates of single parenthood.
- Close parental supervision has a similar but less consistent relationship.

Religious commitment:

- The intensity of the individual's religious commitment (religiosity) can be powerfully influential, but its effect is complex and not uniform.

Willingness:

- Young women who themselves reject the idea of having a child without being married often manage not to, even when they come from backgrounds that predispose them to do so.

- The prevailing peer milieu a respondent encounters at her school also conditions her propensity to become a single mother.

Problem behavior:

- A higher than expected proportion of young women who initially had symptoms of problem behavior became single mothers thereafter.

Opportunity costs:

- Those young women who expect to continue their education (hence have more to lose in the future by becoming single mothers) are less likely to bear a child out of wedlock than those who lack that opportunity.

Each of these factors, considered individually, appears to temper single childbearing rates. In reality, though, such factors never operate singly. What matters, then, is the *strength* of such connections, net of other background differences, and their consistency across different race and ethnic groups.

Teenage women who become single mothers are a highly diverse population; not all are equally responsive to the forms of social restraint that may stand out as most important in people's minds. For example, distinct forms of social restraint predominate for blacks, whites, and Hispanics. For blacks, close parental supervision has the strongest influence in lowering the rate of single childbearing; for whites, a high-quality relationship with parents is the strongest influence; among Hispanics, religiosity appears to be strongest.

In the realm of opportunity costs and personal unwillingness to consider single childbearing, our specific results establish an important general point. Where personal motivations exist for not getting involved with early unwed childbearing, young women manage not to. This effect appears far stronger among blacks than whites. From a policy perspective, then, the individual teenager's own awareness and perception of what she would stand to lose can act as a powerful deterrent to becoming a single mother.

The peer milieu encountered at school is yet another domain of influence, but only among whites. This finding suggests that school-based interventions may need to be targeted on peer influences in only certain school settings.

The picture that emerges is a composite one, made up of several "universal" influences (background factors and social restraints of one form or another) and other racially and ethnically distinctive ones. Peeling back these layers of separate influence illustrates the complexity of the social process that generates teenage single-parent families. Nevertheless, certain similarities across race or ethnic subgroups in what predicts single parenthood are remarkable, given the sizable disparity between black and white childbearing rates.

Our results carry certain important limitations. First, ours is an observational study, not an experiment; hence, it cannot prove causality. Its results can point to promising directions where intervention *might* change outcomes. Second, the *HS&B* dataset on which the analysis is based was originally collected for purposes other than studying single childbearing. As is typical of such secondary analyses, we encountered unresolvable measurement problems, limiting the interpretation of our results. The principal limitations derive from the fact that *HS&B* does not identify biological motherhood directly; rather, it identifies, somewhat obliquely, social motherhood. Not everyone in the sample who ever bore a child has been detected, and the fraction of young women who become single mothers according to *HS&B* is lower than other national benchmark measures. We have identified several factors that would plausibly account for this shortfall, but it remains a potential source of bias. Additionally, the nominally single-parent family we have identified rarely exists in social isolation. In fact, the vast majority are embedded within residential units that include other adults, which often transforms the sociological mother into a shared role. Any applications of our findings should keep these necessary limitations in mind.

ACKNOWLEDGMENTS

The authors thank the following colleagues for valuable comments on earlier drafts: Frank F. Furstenberg (University of Pennsylvania), Calvin Goldscheider (Brown University), Sandra Hofferth (Center for Population Research, NICHD); and at RAND Gus W. Haggstrom, David E. Kanouse, Stephen P. Klein, Joyce E. Peterson, James P. Smith, and Gail L. Zellman. We also thank Helen Turin, whose editing has enhanced the manuscript. The authors, of course, are solely responsible for the analysis and conclusions reported here.

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I. INTRODUCTION

Single-parent teenage families impose large and lasting burdens on society. Beyond the obvious dollar costs to the public sector, estimated at over $16 billion annually, are other social costs imposed on the mothers and infants whose potentials and lives are blighted. Infants born to teenage mothers often receive deficient prenatal care, and that neglect sharply increases the risks of prematurity, birth defects, and retardation. Such children are frequently raised in economically impoverished circumstances. Their mothers often have not completed the developmental tasks necessary for adequate parenthood. The ramifications of these circumstances stretch into the future, burdening their families and society for generations.

American teenagers give birth at significantly higher rates than their counterparts in virtually every other industrialized nation. In 1985, for example, 32 of every 1,000 unmarried women aged 15–19 gave birth. The infants born to these 271,000 teenagers accounted for one of every fourteen births nationwide and one of every three births to single women. Many more teenagers become pregnant each year but end their pregnancies in abortion. Others go quickly into marriage.

This report examines why the national rate of single childbearing is so high, who these children having children are, and what might lower the rate. Our objectives are to pinpoint those demographic and social characteristics of teenage women that place them at highest risk of single childbearing and to explore how that risk is tempered by school, family, and religious influences. Because we concentrate on policy rather than explanation, our emphasis throughout will be on what might change the outcome of a complex process, as well as on how the process itself works. By examining how certain high-risk individuals appear to avoid single childbearing, we seek to uncover mechanisms through which policymakers might advance particular ends—for example, reducing single childbearing nationally. We develop and test hypotheses about the effects of various factors on single childbearing. At the same time, we try to disentangle the complex causal mechanisms underlying this phenomenon. Overall, our results furnish insights into the process that produces unmarried teenage mothers and findings on which policymakers can base a design of interventions.

Premarital childbearing reflects the interplay between a biological capacity to reproduce and social forces that discourage doing so before marriage. In the past, such forces either postponed sexual activity

until a culturally defined "marriageable" age or prescribed marriage as the way to resolve a premarital pregnancy when it occurred. Now, however, the biological capacity to reproduce develops earlier in young women's lives than before, and sexual activity commences at a young age: Among metropolitan teenage women, 38 percent of blacks and 27 percent of whites, for example, are sexually active by age 16 (Hofferth, Kahn, and Baldwin, 1987). At the same time, contemporary women typically postpone marriage for several years beyond their late teens. Accordingly, young women now face a prolonged period of either sexual abstinence or exposure to the risk of premarital conception. Finally, single teenage women who conceive are now more inclined than ever to bear the child out of wedlock rather than resolve the premarital pregnancy through marriage (Hofferth, 1987).

Single childbearing by contemporary teens, then, reflects an erosion of traditional forms of social control, and that erosion has intensified public concern with the family, the church, and the school—the principal institutions that traditionally set and monitor standards of appropriate sexual and reproductive conduct.[1] But such erosion only partly accounts for contemporary single teenage childbearing. These sociodemographic transformations are also accentuating other predisposing factors—e.g., low academic ability, adolescent problem behavior, or lack of individual opportunity—that make particular individuals vulnerable.

The data used in this study afford an unusual opportunity to examine certain of these social influences in conjunction with important individual predisposing characteristics. We analyze a large, nationally representative panel of some 13,000 contemporary high school sophomore women (part of the ongoing *High School and Beyond (HS&B)* Panel, surveyed by the National Center for Education Statistics). We follow these school-age women as they mature through their 16th, 17th, and 18th years, comparing the 342 of them who form single-parent families with their peers who do not. From those thousands of individual experiences, we generalize statistically about the factors within the individuals themselves, their families, and society that predisposed some to become single parents and spared others.

[1]The broad social context within which these stark realities are set is riddled by ideological divisions over who should do what about single teenage childbearing. Public debate ranges from the position of those who insist that teenagers abstain from sex to the position of those who advocate counseling teenagers about birth control and supplying contraceptives through school-based clinics. The results of a 1985 Harris poll illustrate the public's concern and ambivalence: 84 percent of adults regard teenage pregnancies as a serious problem, and 85 percent favor teaching sex-education in schools; yet fewer than half favor clinics dispensing birth control without parental consent (Harris, 1986).

The policy-driven objectives of our study and the distinctive strengths and weaknesses of the *HS&B* dataset prompted a research design with certain features. First, *HS&B*'s large sample size has enabled us to examine blacks, Hispanics, and non-Hispanic whites separately to account for each group's distinctiveness. In addition, we assess effects of the teenager's family and personal characteristics, the social controls exerted by the family, her own plans and attitudes and those of her school peers, and her behavioral problems in school on her likelihood of becoming a single parent.

II. CONCEPTUAL FRAMEWORK

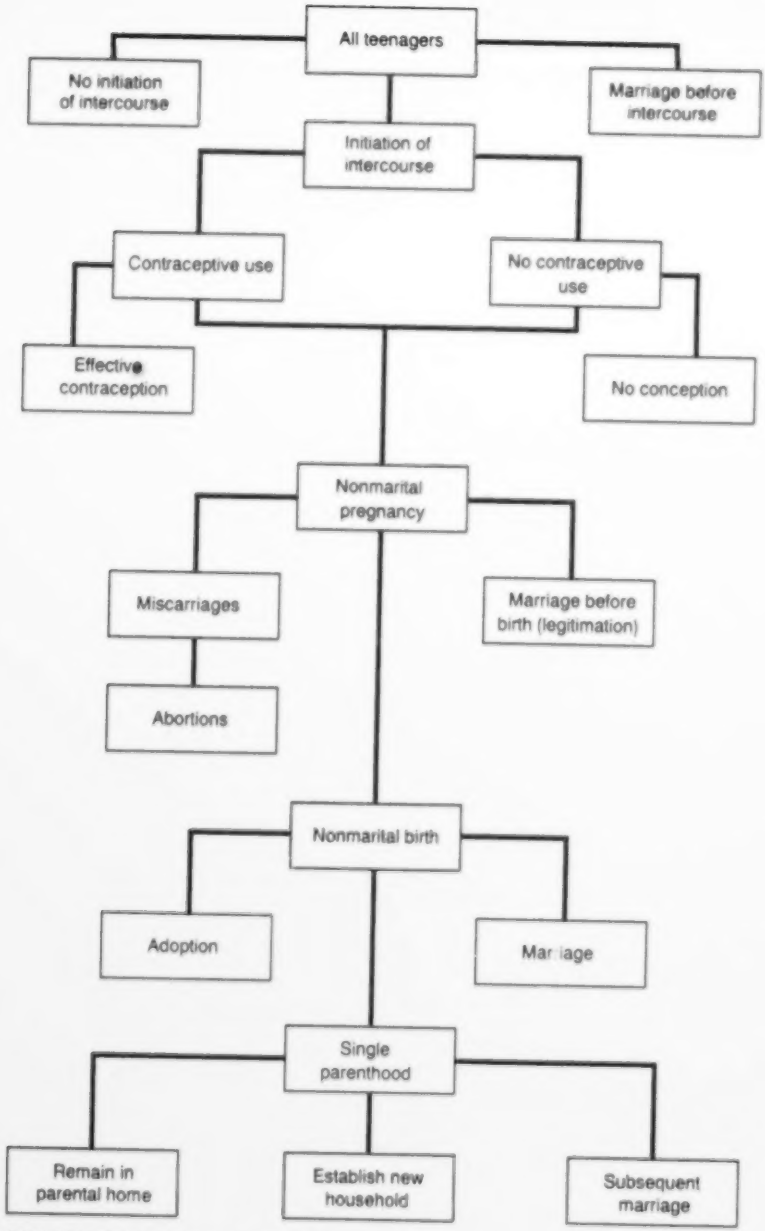
The formation of a single-parent family is the end point of a socially structured process a young woman activates when she initiates sexual activity. Her subsequent actions, or inactions, with regard to contraceptive practice and pregnancy resolution largely determine the eventual outcome of a complex chain of events set in motion. Some individuals contracept from the outset, others fail to do so until they have a pregnancy "scare." Of those who become pregnant, some opt for abortion, others get married, and still others bear the child without marrying.

These actions and inactions are shaped by cultural and religious influences, economic incentives and disincentives, and other factors that differ among individuals and also among sexual partners. The interplay among these individual and social factors is only partly understood, but the framework of their relationships, as documented in previous research, offers guidelines for our analysis. In this section, we set forth a conceptual framework, based on research findings, for interpreting our own results.

Despite our exclusive focus on young women who become parents while unmarried, most of the steps along the way involve a young man. (It is a *couple* that engages in sexual activity, contracepts, or —when both persons ignore the issue—fails to do so, and decides to marry or not.) However, no large, representative dataset furnished such information on young women and their sexual partners. Accordingly, we have had to restrict our analysis to young women and the forces operating on them.

HOW SINGLE-PARENT FAMILIES ARE FORMED

It is useful to distinguish three analytically distinct stages where distinctive social, economic, and biological factors shape the choices a young woman makes: (1) initiation of intercourse, (2) occurrence of a nonmarital pregnancy, and (3) resolution of the pregnancy through a nonmarital birth (Davis and Blake, 1956). Below we consider the factors that shape choices at each stage displayed in Fig. 1.

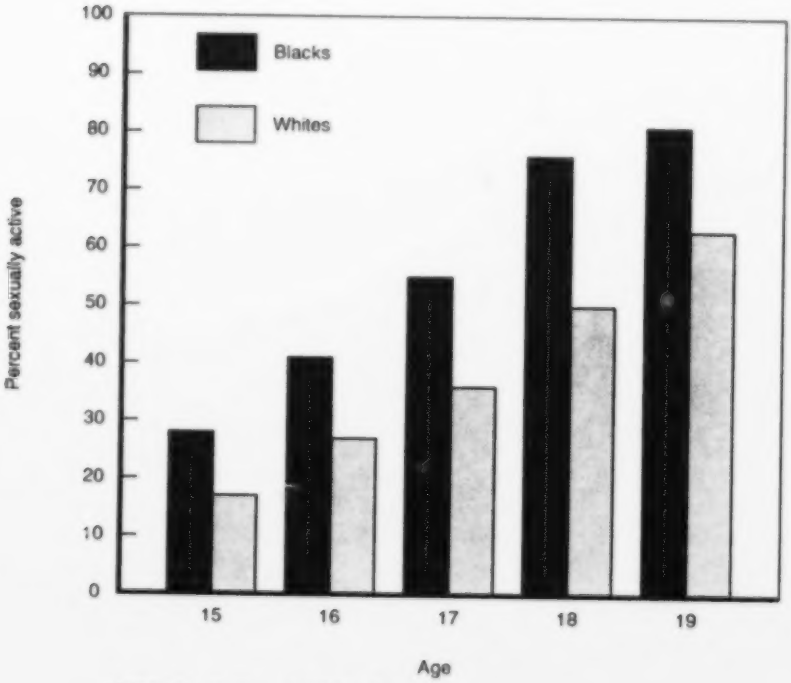


SOURCE: Adapted from Hayes, 1987.

Fig. 1—Sequence of decisions affecting adolescent sexual and fertility behavior

Stage 1: Initiation of Intercourse

American women typically initiate sexual activity during their late teens. The proportion of never-married women who are sexually active increases from 18 percent at age 15 to 66 percent by age 19; and as seen in Fig. 2, the pattern of the sexual debut commences earlier and progresses faster among black than white teens. In recent years, the decline in the age of first intercourse has slowed and even reversed (Hofferth, Kahn, and Baldwin, 1987).[1]



SOURCE: Pratt et al. (1984), Table 2.

Fig. 2—Increase with age in percent of never-married women sexually active, by race, 1982

[1]Survey data document a steep rise in premarital sexual intercourse among teenagers—particularly white women—during the 1970s, although the most recent (1982) data indicate a leveling off of premarital sexual activity among white teenagers and a modest reversal of the trend among blacks (Pratt et al., 1984).

The fact that over two-thirds of never-married American women become sexually active during their teens directs attention to the timing and circumstances of the sexual debut. Here, previous studies document a complex interplay of variables reflecting biological or social readiness for sex, and social and contextual factors influencing the initiation of sexual intercourse.[2]

Among the biological influences are:

- Pubertal development is earlier in black girls than in white girls.[3] This biological factor foreshadows both the level of sexual experience and the probability of sexual debut for all adolescents (Morris, Mallin, and Udry, 1982; Teddlie et al., 1979; Zelnik, Kantner, and Ford, 1981; Billy and Udry, 1983).
- Changing hormonal levels, which directly influence sexual motivation and behavior among adolescent males (Udry et al., 1985).

Among social influences are:

- Racially distinctive patterns of precoital heterosexual behaviors in early adolescence. For whites, the progression of such behaviors tends to be more gradual, extending the sequence of noncoital petting behaviors over a longer span of adolescence before the first act of intercourse and, perhaps, providing extended interim periods of abstinence as teens grow older and change partners (Smith and Udry, 1985).
- Deeply held religious beliefs, which are capable of inhibiting sexual intercourse (Moore and Caldwell, 1977; Devaney and Hubley, 1981; Jessor and Jessor, 1975).
- Educational expectations and measured intelligence, which postpone sexual debut (Devaney and Hubley, 1981; Mott et al., 1983).
- Family structure, with earlier onset of sexual activity among adolescents from disrupted families (Zelnik, Kantner, and Ford,

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[2]For further discussion, see Billy and Udry, 1985a, 1985b; Billy, Rodgers, and Udry, 1984; Furstenberg et al., 1987; Smith, Udry, and Morris, 1985; Zelnik, Kantner, and Ford, 1981.

[3]Even with certain racial differences controlled, the earliness of sexual debut differs for whites and blacks (Devaney and Hubley, 1981; Zabin et al., 1986). Explanations for the racial difference in sexual activity and early childbearing tend to fall back on cultural, normative, or attitudinal factors. Blacks are more sexually permissive, see marriage as less important, and perceive their social milieus as more accepting of an out-of-wedlock birth than whites (Hofferth, 1987). Such attitude and value differences might arise from the poor economic prospects faced by blacks, especially males, together with discrimination and residential segregation (Hogan and Kitagawa, 1985).

1981; Moore and Caldwell, 1976; Newcomer and Udry, 1987; Inazu and Fox, 1980; Moore, Peterson, and Furstenberg, 1984), and a higher proportion being sexually experienced for those from large families or with a sister who became a teenage mother (Hogan and Kitagawa, 1985).

Among the contextual influences are:

- Neighborhood context, the evidence indicating that young black women living in a poverty area face substantially increased risks of early sexual activity (Hogan and Kitagawa, 1985).
- Friendship patterns, which have been shown to affect the timing of the sexual debut for young *white* women (Billy and Udry, 1985a, 1985b; Billy, Rodgers, and Udry, 1984).
- Distinctive normative contexts characterizing racially isolated schools (Furstenberg et al., 1987).

The causal relationships operating here may be exceptionally complex. For example, the earlier onset of sexual activity among adolescents from disrupted families could reflect a combination of any of the following causal links: (1) The economic deprivation of a single-parent family may limit a young woman's educational aspirations, thereby lowering her opportunity costs of an early birth; (2) single parents may hold attitudes or values that are less disapproving of early premarital sexual activity; (3) single parents, through their own dating and nonmarital sexual activity, may furnish role models for their own children's sexual activity; (4) single parents (who typically are employed) may be less able to monitor and supervise their daughters' activities; (5) whether or not a single parent remains in the home full-time, the parent may be at a disadvantage (relative to a two-parent situation) in controlling the daughter's behavior; (6) marital disruption may lead to a rejection of parental influence and a heightened dependence instead on peers (Moore, Peterson, and Furstenberg, 1984).

Although parents obviously may play a role, the evidence on whether they effectively discourage the early onset of sexual activity is inconclusive.[4] Moreover, research offers no clearcut support for the view that sex education, ready availability of contraceptives and abortion, or liberal Aid to Families with Dependent Children (AFDC) benefits

[4]Research on family communication (Inazu and Fox, 1980; Newcomer and Udry, 1984, 1985, Weinstein and Thornton, 1987) and on teenagers' use of contraceptives (Furstenberg et al., 1984) thus far has not isolated any consistent effects on early sexual and contraceptive behavior. (At least one study—Newcomer and Udry, 1985—has demonstrated the serious pitfalls entailed in measuring parent-child communication in early adolescence.)

encourage early sexual activity (Dawson, 1986; Marsiglio and Mott, 1986; Moore and Caldwell, 1976; Scales, 1981; Zabin et al. 1986b; Zelnik and Kim, 1982).

Stage 2: Becoming Pregnant

Upon becoming sexually active, a young woman's risk of becoming pregnant depends on her contraceptive practice and also her reluctance or willingness to have a child at this stage in her life. Here, we can distinguish three choices about birth control: how soon (if at all) she begins using contraception, what type of method she adopts, and how diligently she uses it. Once again, her actions and inactions are shaped by a complex variety of social influences that change rapidly with age (see Whitley and Schofield, 1986, for a review).

At early ages, sexual intercourse typically is sporadic and experimental, and "decisions" (if they can be so characterized) tend to be made on the spur of the moment. Few adolescents (17 percent of young women and 25 percent of young men) report planning their first act of intercourse (Zelnik and Shah, 1983); and the younger she is, the less likely a young woman is to use contraception at first intercourse (31 percent having first intercourse before age 15 compared with 62 percent for those 18 and older.)[5]

The typically sporadic and experimental nature of teenage sexual activity is not conducive to developing contraceptive habits and skills. After becoming sexually active, young women typically delay using contraception for a substantial interval (Zelnik, Koenig, and Kim, 1984) and delay seeking information—11.5 months on average, according to one estimate (Zabin and Clark, 1983). It is not surprising that young women face a substantial risk of becoming pregnant during this initial interval of noncontraception: Half of all first premarital teen pregnancies occur within the first six months after beginning sexual intercourse (Zabin, Kantner, and Zelnik, 1979).

Little is known about how parents can encourage contraceptive use at this early stage. Young women who discuss the topic of contraception at all with their mothers (Furstenberg, 1976) or have good parent-child communication generally (Fox, 1980) show better contraceptive practice; the evidence, however, is inconsistent (Furstenberg et al., 1984).

The second important choice the sexually active young woman makes is what type of contraceptive to use. Properly used medically prescribed methods (e.g., IUD, pill, or diaphragm) can be highly effective but must be obtained from a clinic or a private physician.

[5]See also Mosher and Bachrach, 1987.

Nonprescription methods (e.g., foam or condom) are somewhat less effective but are available more readily and on short notice. Teenagers who obtain a prescribed contraceptive before first intercourse or after consistent use of a nonprescription method face the lowest subsequent risk of pregnancy (Zelnik, Koenig, and Kim, 1984). Some young women, however, discontinue one method without replacing it with another.

The third choice concerns the diligence with which the young woman practices contraception. Major obstacles to consistent and effective contraceptive practice among sexually active teenagers include social values that denigrate contraceptive preparedness; poor communication with parents and partners; inadequate factual information from peers; discomfort and embarrassment in the areas of sexuality and contraception; and poor understanding of many of the most effective contraceptive methods, especially the pill (Kisker, 1985). Adolescents who *report* being conscientious users of contraception tend to be older, white, and from families with parents who work and have higher levels of education. Contraceptive continuation tends to be higher also among those with above-average grades, with college plans, enrolled in school or employed, and in a stable relationship with a partner (Furstenberg et al., 1983). Such self-reported diligence, of course, may give only a partial picture, because many teenagers have difficulty accepting themselves as sexual beings who engage in sexual intercourse (Cvetkovich et al., 1975). Denying the risk of pregnancy (and therefore not contracepting) is one escape route. Consistent with this point, Cvetkovich and Grote (1981) suggest that a combination of factors, including age at sexual debut, stability of the relationship, trust in the partner, attitudes toward premarital pregnancy, and communication skills, differentiate effective users from nonusers of contraception.

An exhaustive review of the psychologically oriented literature (Morrison, 1985) suggests that (1) adolescents are poorly informed about reproductive physiology, (2) they have negative attitudes toward contraception generally and toward using contraceptives, and (3) the widespread nonuse of contraception by adolescents is not irrational given their levels of information, beliefs, and attitudes.

Some young people are ignorant of how substantial the risk of conception is without birth control. Asked to estimate such risk, adolescents report probabilities as low as 25 percent (assuming no contraception) and as low as 0 percent (assuming rhythm and diaphragm use). Only a small fraction of sexually experienced teenage women, however, are unaware of methods to prevent pregnancy. Further complicating matters is the role of cognitive function in the use of contraception. Teenagers who have not advanced developmentally to formal

operational thinking cannot yet project, for example, the possibility that pregnancy can result from unprotected intercourse.

For some single teenage women, the desire—or simply lack of reluctance—to have a child may provide conscious or subconscious motivation for letting pregnancy "happen." It may also lead to a conscious decision made with reference to some specific goals—for example, keeping a boyfriend, being spontaneous, or affirming her own attractiveness. This perspective (Luker, 1975) clarifies the apparently senseless (through adult eyes) cost accounting of certain teenagers and alerts us to (1) how much teenagers value peer acceptance and having a love relationship; (2) the difficulty that the family, school, and community have in competing with the gratifications of the peer group; and (3) the difficulty of acquiring knowledge and services to prevent pregnancy. All of those make risking pregnancy less unreasonable in the eyes of many teenagers.

Stage 3: Resolving the Pregnancy

About 80 percent of women who become pregnant during their teens conceive premaritally (Hofferth, 1987). Although many resolve such pregnancies by marrying, the proportion who do so has declined in recent years. Those who do not marry may instead have the pregnancy aborted or carry it to term and either place the infant up for adoption or keep it. The choices culminating in this last alternative launch a single-parent family.

The way that premarital pregnancy is resolved varies markedly by the mother's age and race. The proportion of all pregnancies that are aborted declines from 58 percent for mothers younger than 15, to 42 percent for 18-to-19 year olds (Henshaw et al., 1981, Table 11). Abortion is more likely when the social and psychological costs of early pregnancy are high and among higher achievers in school (Card and Wise, 1978; Fischman, 1977; Hansen, Stroh, and Whitaker, 1978). With respect to race, premaritally pregnant women are more likely to marry to legitimate the birth if they are white than black (Zelnik and Kantner, 1980), although this racial difference is shrinking.

There are several explanations for why some pregnant girls marry but others do not. Hogan and Kitagawa (1985) identify three distinctive paths to adulthood for young women: (1) early marriage and parenthood, (2) completing school and choosing a career before establishing her own family, and (3) becoming a single mother at an early age. If she sees no benefit to completing school or to marrying the types of young men available to her, then the third alternative becomes a more common occurrence.

Viewed in this light, the benefits of early marriage have declined sharply for many teenage women. As unmarried mothers themselves explain, the child's father may have been a heavy drug user, a criminal, and unemployed or unemployable (Furstenberg, 1976). Other evidence suggests that by marrying, a young woman forgos much of the assistance that she might otherwise have received from her parents (Furstenberg, 1976; Zellman, 1981). The legalization of abortion, insofar as it substitutes for "shotgun" weddings, may be another contributing factor (Zelnik and Kantner, 1980). More generally, pregnancy resolution is shaped partly by the costs and benefits of childbearing. The costs may be affected by, for example, availability of school programs for pregnant students, an extended family, and public assistance.

Still, the proportion of pregnant women who bear a child without marrying has increased recently, possibly because the stigma attached to doing so has weakened.

Adoption as a resolution to an adolescent, out-of-wedlock pregnancy is far less common than it once was. Abortion may have become a substitute.

THEORETICAL PERSPECTIVES ON SINGLE TEENAGE CHILDBEARING

Our analysis relies on and extends four complementary perspectives highlighting separate aspects of what we regard as common factors underlying the behavior of blacks, Latinos, and whites.

The demographic compositional perspective emphasizes that patterns of marriage and childbearing differ fundamentally for the three racial and ethnic groups (e.g., Darabi and Ortiz, 1987; Michael and Tuma, 1985; Moore, Simms, and Betsey, 1986) and that these group-specific marital and fertility patterns may reflect differences in the demographic composition of these groups. (For example, blacks have less education, lower incomes, and greater welfare-dependency than whites, which may account for the divergent childbearing observed.)[6] Given the evidence on this point, we have performed separate analyses for these three groups.

Our second perspective emphasizes the peer context and the sharply differing attitudes or norms toward unwed childbearing it can produce in individuals. Schools and friends provide an important source of normative and social pressure—either toward or away from early sexual

[6]Furstenberg et al., 1987, test a similar explanation of black/white differences in the timing of first intercourse.

activity (Billy and Udry, 1985a, 1985b; Furstenberg et al., 1987). For example, those who report that most of their friends have had sexual intercourse are substantially more likely to have initiated sexual relations themselves than are those who report little sexual activity among their friends (Billy and Udry, 1985a, 1985b). Peer contexts have been shown to differ substantially between blacks and whites: On average, blacks report having many more sexually experienced friends than do whites (a partial explanation for why the timing of first intercourse is earlier for blacks, according to Furstenberg et al., 1987). More important, it implies that normative pressure to begin sexual relations may operate primarily at the community or school level.

A third perspective derives from the social psychology of problem behavior. Certain individuals are likely to engage in "problem behaviors," including early initiation of sexual activity (Jessor and Jessor, 1975) and possibly also unprotected intercourse and deliberate out-of-wedlock childbearing. This theory postulates that certain people display a constellation of alienation, rebelliousness, and various risk-taking behaviors, accompanied by a lack of understanding of the future implications of current actions.[7] Specific behaviors that "go together" in problem-behavior-prone persons include alcohol and drug use, misbehavior in school, criminal behavior, and general deviant behavior (aggression, lying, stealing).[8] Problem-behavior theory may pertain as well to the social control of reproduction. Specifically, for young women, the constellation of "problem behaviors" may include childbearing out of wedlock.

Finally, we draw on a perspective within economics emphasizing what a young woman stands to lose (or gain) by forming a single-parent family—that is, her opportunity costs. Seeing these opportunity costs as a teenager perceives them helps us interpret behavior at each stage of the process of single-parent family formation, from initiation of sexual activity through resolution of pregnancy. The common emphasis is on the incentives and disincentives shaping intendedly rational behavior. For example, a teenager who "foolishly"—by adult standards—engages in unprotected intercourse may be acting sensibly in reference to her own perceptions of the costs and benefits that

[7]Abelson (1968) uses the notion of "psychologic" to explain how teenagers might interpret the facts to arrive at apparently irrational decisions.

[8]A large body of psychological literature supports the notion that risk-taking and problem behaviors "go together" (Jessor and Jessor, 1975, 1977). Cognitive and problem theorists, moreover, assert that teenagers may lack the cognitive maturity to behave "reasonably" by adult standards. For example, the capacity for abstract reasoning is not fully developed in an average child until approximately 13 to 15 years of age, and even later among children of low socioeconomic status (Kohlberg, 1969; Kohlberg and Zigler, 1967; Piaget, 1972). See also preliminary results in Mott and Haurin, 1987.

contraceptive usage entails (Luker, 1975).[9] Such costs (as weighed in the teenager's mind) might include difficulty in acquiring and using contraception, her reluctance to acknowledge to herself that she *is* sexually active, or not wanting to appear to be "prepared."

SUMMARY

We have amalgamated the insights offered by sociology, psychology, and economics to broaden our interpretation of single parenthood among teenagers. By themselves, these perspectives are incomplete, but when joined they furnish a useful conceptual framework for interpreting various junctures at which a young woman's actions (or inaction) lead to single parenthood. We group these actions for analytic purposes according to whether they affect sexual activity, contraceptive practice, or pregnancy resolution; and for each category, we identify the social, economic, and biological influences on those actions.

We shall draw on this conceptual framework ahead to pose hypotheses and the linkages we uncover with respect to a key outcome that *HS&B* measures: the probability of becoming a single mother during the middle teens. Explaining this outcome will show why certain segments of the teenage population are highly likely to become single mothers and suggest how potential interventions might mitigate their high risk.

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[9]Luker's interpretation has received partial confirmation (Crosbie and Bitte, 1982; Foreit and Foreit, 1981; Peacock, 1982; Philliber et al., 1984). The more general underlying cost-benefit notion (of interest here) is supported by studies based on aggregate data. For example, Evans, Selstad, and Welcher (1976) found previous contraceptive usage by pregnant teenagers to be higher among those who chose to abort than to deliver, which suggests that higher perceived costs of a pregnancy induce greater contraception to avoid it. Also, studies of adolescent contraceptive usage (e.g., Zelnik and Kantner, 1980) show higher usage rates where socioeconomic status is higher, possibly because higher educational and economic aspirations increase the personal costs of an early birth (e.g., Klein, 1978; Luker, 1975).

III. DATA AND MEASUREMENT

HIGH SCHOOL AND BEYOND DATASET

High School and Beyond is a large, nationally representative panel study of two high school student cohorts initially surveyed in spring 1980 and followed up in 1982, 1984, and 1986. One cohort consists of 1980 sophomores (N = 30,030), the other of 1980 seniors (N = 28,240). For both, *HS&B* contains a wealth of data on education, family and household formation, entry into parenthood, and developing aspirations. Its large sample size can support detailed comparative analysis of specific subgroups (e.g., whites, blacks, and Hispanics).

The base-year survey in spring 1980 involved young women and men from a national representative sample of 1,015 schools. In spring 1982, subsamples of the base-year survey sample were recontacted. For the sophomore cohort, these subsamples included all who had remained in the same schools they attended during the 1980 base-year survey (in-school students) and about 50 percent of those who had not remained (dropouts, transfers, and early graduates). The first follow-up response rates were 96 percent for in-school students, 92 percent for early graduates, 91 percent for transfers, and 88 percent for dropouts.

HS&B has several features that make it especially well suited for this study:

1. *Timeliness*: *HS&B* documents parenthood prospectively during the early 1980s, not retrospectively for some indefinite earlier period (as many other datasets do).
2. *Large sample size*: *HS&B* is a large and nationally representative sample, furnishing an ample number of unwed mothers to support detailed analyses.
3. *Availability of comparison groups*: The dataset furnishes information on the mothers-to-be and also on their peers who *avoided* parenthood, enabling us to pinpoint the antecedents of each outcome.
4. *Richness of background data*: *HS&B* contains an array of measures for controlling on important differences between parents-to-be and nonparents in academic ability, socioeconomic status, and other factors.
5. *Measures of key outcomes*: We focus here on becoming a mother while single.

Offsetting these strengths are several limitations:

1. *Restriction to a single cohort*: *HS&B* presents interpretational problems that always attend the analysis of a single cohort.
2. *Intervening factors not distinguished*: *HS&B* lacks measures of several important links in the causal chain leading to the formation of a single-parent family—most notably, sexual activity and contraceptive practice.

Our analytic sample is a subset of cases from the 1980 sophomore cohort: the 13,061 young women who responded to both the baseline questionnaire in 1980 and the first follow-up questionnaire in 1982 and who were neither married nor mothers at baseline. We identified 342 of these women who were single mothers two years later. Technical details on selection of the analytic sample and our definitions of marital and parenthood status are given in App. A.

MEASUREMENT

Those 1980 sophomores who became mothers by 1982 differ in several important respects from those who did not (as will be shown in Sec. V). To pinpoint groups at risk, we shall build a model that predicts unwed childbearing rates using several exogenous background variables listed in Table 1, all measured at baseline. The following sections briefly describe how each of these variables has been measured. Appendix B provides further technical detail.

BACKGROUND VARIABLES

Race/Ethnicity. *HS&B* furnishes highly detailed racial and ethnic distinctions. For example, it is possible to distinguish American Indians, Alaskan Natives, Koreans, Puerto Ricans, and other equally detailed subgroups. However, the resulting sample sizes would be far too small for our purposes. Accordingly, we opted for the following broad categories, which reflect the racially and ethnically most distinctive features of single-teenage parenthood: (1) Black; (2) Hispanic (includes self-identification as Mexican, Mexican-American, Chicano, Cuban, Cubano, Puerto Rican, Puertorriqueno, Boricua, or other Latin American, Latino, Hispanic, or Spanish descent); and (3) White (includes all other race/ethnic self-identifications: White, American Indian, Alaskan Native, Asian, Canadian, etc.).

Table 1

BACKGROUND VARIABLES

	Characteristic of Respondent	Variable Name	Definition
1.	Race/ethnicity	ETHNIC	Black, Hispanic, White[a]
2.	Socioeconomic status	BYSES	As defined on *HS&B*
3.	Academic ability	ABLE	Average of standardized vocabulary, reading, and mathematics test scores
4.	Composition of residential household	FAMILY	Nuclear; female-headed; father only; step-parent only; other

NOTE: Further technical detail on how the variables were defined is provided in Appendix B.

[a]Technically, "nonblack non-Hispanic."

Socioeconomic Status. At the 1980 baseline, *HS&B* provides a standardized composite variable designed to measure socioeconomic status from responses to questions about mother's and father's education, father's occupation, family income, and possession of a series of consumer items such as a calculator and 50 or more books. We shall use this variable as defined; where missing, we impute its value from other information (see App. B).

Academic Ability. In conjunction with *HS&B*, standardized vocabulary, reading, mathematics, science, civics, and writing tests were administered at baseline. We drew on all three test scores to construct our own summary measure of academic ability ("ABLE"), which is the average of their values. (See App. B for technical details and imputation procedures for missing values.)

Family Structure. *HS&B* elicited information at baseline on each respondent's household makeup, which provided a basis for distinguishing female-headed families. We defined such families as those in which the respondent explicitly reported living with her mother or stepmother but not with her father or stepfather, or (for a few cases) where she said she lived alone.

MARITAL AND PARENTHOOD STATUS

Specific questionnaire items on each survey wave elicit information on the respondent's marital status that can be used to make the following distinctions: (1) ever married at baseline, (2) ever married at follow-up, (3) never married. (For further detail, see App. A.) Distinguishing mothers from nonmothers on *HS&B* is less straightforward. No single question (or battery of questions) elicits this information completely for everyone in the sample.

Following an exploratory analysis, we devised a procedure (detailed in App. A) for combining information from several responses given at baseline and first follow-up. A follow-up respondent was coded as a parent if she reported that she either *lived with* her own child or that she *already had* a child. Our measure unavoidably includes any respondents who happen to be adoptive-, step-, or foster-mothers, but such nonbiological mothers constitute only a minuscule fraction of these high-school-age women.

Altogether, 598 (4.6 percent) of the 13,061 sophomores who were not mothers initially were classified as mothers by the first follow-up. Of these, 342 (2.6 percent of all these respondents) also were unmarried. Table 2 shows the race-specific fractions for all such women and for those who were unmarried when classified as mothers.[1] (Because *HS&B* is a stratified sample of this population of 13,061 females, the

Table 2

RISK OF PARENTHOOD BY RACE, SOPHOMORE FEMALES SURVEYED IN 1980 AND 1982

	All Sophomores	Parents			Unwed Parents		
		N	Risk[a]	SD	N	Risk[a]	SD
Black	1,759	179	13.0%	0.9%	170	12.2%	0.9%
Hispanic	2,242	142	9.5	0.7	76	5.0	0.6
White[b]	9,060	227	4.3	0.2	96	1.3	0.2
Total	13,061	598			342		

SOURCE: *HS&B* analytic file.
[a]Risk employs sample weights.
[b]Non-Hispanics only.

[1]A female could be misclassified as a single mother if she was married when she become a mother but divorced thereafter and, when resurveyed in her senior year, reported herself as unmarried.

fractions shown here and in all subsequent tables have been estimated with sample weights.)

These fractions based on *HS&B* are somewhat lower than other national benchmark measures of teenage parenthood.[2] Among the factors likely to account for this disparity are: (1) Students who dropped out of school before the spring of the sophomore year were excluded from the *HS&B* sample; (2) sophomores who already were mothers were screened out of our analytic sample; and (3) there is a somewhat lower response rate at first follow-up for dropouts than nondropouts, which might exclude some sophomores who were mothers by first follow-up.

Bearing a child outside marriage is not always synonymous with forming a single-parent family or taking on the social role of the single parent. The latter two possibilities get defined largely by subsequent living arrangements. For example, a mother and her infant may reside together with other relatives, or she may place the infant in an adoptive family. Most unwed mothers in our sample appear to have retained their infants, thereby forming what are technically single-parent families.[3] Few of them, however, live *only* with their child (only 3 percent of the black mothers, for example). In the vast majority of cases these nominally single-parent families are embedded within household units that include one or more other adults—typically the teenager's own mother, her siblings, or other family members (see Table 3). In such extended family structures, the sociological "mother" may, in effect, be a role that the biological mother shares (Furstenberg, 1976).

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[2]The parenthood measures we derive from *HS&B* are not, of course, directly comparable to these other national benchmarks. For example, the former span a two-year interval whereas the latter span single-year intervals. The closest approximation we could make was arrived at by combining live birth rates by single year of age and then adjusting the resulting rate to approximate first births only. Briefly, the birthrate for 16-year-old women in 1980 was 3.31 per hundred and for 17-year-old women in 1981 was 5.15 (Demographic and Behavioral Sciences Branch, 1986, Table 2, derived from NCHS tabulations). Adding these two rates yields 8.46 births per hundred over the two-year period. Multiplying that rate by 0.87 (the proportion of first births among all births to 15-to-17-year-old women in 1982, from NCHS, 1984, Table 3) yields 7.36 first births per hundred. Our rate (4.58) is only 62 percent as high, a difference we attribute to the factors discussed above.

[3]Of respondents classified as unwed mothers, 60 percent of whites, 73 percent of blacks, and 57 percent of Hispanics reported living with "my child or children" at first follow-up.

Table 3

MEMBERSHIP OF UNWED MOTHER'S HOUSEHOLD AT FOLLOW-UP
(Percent)

Household Membership	Mother's Race/Ethnicity		
	Black	Hispanic	White
Respondent and child(ren) only	3.0	15.8	9.3
Additional members:[a]			
Father	20.4	29.3	45.4
Other male guardian (stepfather or foster father)	6.8	5.6	3.5
Mother	80.9	69.5	68.0
Other female guardian (stepmother or foster mother)	3.0	2.7	0.0
Brother(s) and/or sister(s) (including step- or half-)	60.0	35.2	54.2
Grandparent(s)	10.5	2.5	8.9
Other relative(s) (children or adults)	12.5	13.9	10.1
Nonrelative(s) (children or adults)	4.7	4.9	14.2

[a]Relationships designated are with reference to the respondent herself. Note that the percentages may total more than 100 percent, as multiple membership is possible.

OTHER VARIABLES

Parenting

Each *HS&B* respondent was asked to report on several facets of her relationship with her parents: how often she talked with them about personal experiences and planning her school program and how closely she believed her parents kept track of how she was doing in school, where she was, and what she was doing. A factor analysis of four separate response items isolated two fairly independent dimensions of the relationship each respondent reported having with her parents. Each dimension was represented as a composite variable, as described in App. C. The "Talk/Plan" dimension is measured by the composite variable "TALKS"; the "Monitor/Know" dimension, by the composite variable "TRACKS."

Religiosity

HS&B furnishes several potential measures of religiosity: frequency of church attendance, frequency of church-related activities, and self-reported religiosity (responses to the question "Do you think of yourself as a religious person?"). The first two measures are conceptually weaker than the last one,[4] and our analysis found them to be less consistent. Accordingly, we shall rely on the self-reported religiosity measure, which, with the notable exception of black Catholics, proves to be a strong predictor of subsequent single parenthood.

Individual Willingness

Each respondent was asked at baseline: "Would you consider having a child if you weren't married?" The response choices were "Yes," "Maybe," or "No." We classified those individuals who chose "Yes" or "Maybe" as "willing," and those who chose "No" or gave no response as "unwilling."

Peer Willingness

The *HS&B* sample is a stratified one that first selected on school. This feature enables us to link each respondent to as many as 17 of her classmates, whose own expressions of "willingness" to consider single childbearing also were measured along with the respondent's views.

As a measure of this milieu, we calculated (1) the fraction of all respondents in her particular school who reported they might consider childbearing without marriage (hereafter, "school willingness factor"), and (2) the median value of this factor over all female *HS&B* respondents, separately by race. (These medians were 31.3 percent for blacks, 23.8 percent for Hispanics, and 22.7 percent for whites.) We then defined an accepting school context as one in which the school willingness factor exceeded this race-specific median. That is, for each respondent, we compared the "willing" fraction of her school peers with the median "willing" fraction for all respondents of her race. If the former (not race-specific) fraction exceeded the latter (race-specific) median fraction, the school was classified as one with an "accepting" milieu for that respondent. Because the definition of this contextual measure is race-specific, a particular school with a median school willingness factor of, say, 25 percent would be classified as one with an accepting milieu for whites but not for blacks.

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[4]For example, current church attendance may vary over the life cycle.

Opportunity Costs

We identified several proxy measures of each respondent's potential "opportunity costs" of becoming a single mother while in her teens. We define them here as what the woman would forgo by way of furthering her education were she to become a single mother. These proxy measures reflect two elements in her future educational plans: (1) whether she expects to pursue at least two years of college, and (2) whether she plans to go to college at some time in the future. Our opportunity costs scale is composed of indicator variables for each element. It ranges from 0 (for those who indicate neither expectation) to 2 (for those who indicate both).

Problem Behavior

The *HS&B* survey furnishes three self-reports indicative of the "problem behavior" constellation: (1) disciplinary problems in school, (2) cutting classes, and (3) absenteeism from school. We have combined them into a simple problem behavior scale, which classifies respondents into one of three possible levels (see App. C).

SUMMARY

Ours is a secondary analysis of a dataset that originally was collected for purposes other than studying single childbearing. Accordingly, we encounter measurement problems that must be resolved, and those resolutions are rarely perfect.

The principal limitations derive from the following. First, *HS&B* does not identify *biological* motherhood directly. What it identifies, somewhat obliquely, is *social* motherhood, and sometimes in terms of residential living arrangements. That is, mothers must be defined as respondents who report having had a child or that they now live with their child. Not everyone who *ever* bore a child will be detected here. Second, the nominally "single-parent family" rarely exists in social isolation. In fact, the vast majority are embedded within residential units that include other adults. Thus, the sociological "mother" may be a role that many of these single teens who have children share with others. Third, the fraction of young women who become single mothers according to *HS&B* is lower than detected by other national benchmark measures.

IV. CONTROLLING FOR BACKGROUND AND ABILITY DIFFERENCES

Women in their mid-teens are far from homogeneous as a group. They differ in their academic aspirations, their attitudes, the kinds of schools they attend, and the kinds of peers with whom they associate. Teens also have diverse backgrounds and abilities and, despite their similar ages, vary widely in their stages of development. Before we can assess how school, family, and religious characteristics affect unwed parenthood, we must account for the differences in backgrounds and other fairly permanent features of individuals' lives.

Certain background characteristics have consistently been found to be strongly associated with teenage out-of-wedlock childbearing. The strongest of these is race: On national data, black teenagers register rates of unwed parenthood that are roughly four times as high as those for whites; for the particular sample reflected in *HS&B*, that differential is closer to 10 times (as shown in Table 2).

Underlying this difference are racially distinctive patterns of marriage and family formation. The typical pattern among contemporary white women involves marriage in the early to mid-twenties and a first birth several years thereafter (Michael and Tuma, 1985; Moore, Simms, and Betsey, 1986). Among contemporary black women, by contrast, about 40 percent bear a first child as a teenager, and over four-fifths of these first births to black teens occur out of wedlock. (The comparable fraction for white teens is one-fourth.)

Corresponding to these patterns are racially distinct attitudes toward marriage and single childbearing. Relative to whites, blacks more often report sexual activity among friends (Furstenberg et al., 1987), favor having a first birth before age 20 (Zelnik, Kantner, and Ford, 1981), and give as an ideal age at first marriage an older age than the age they specify as ideal for a first birth (Moore, Simms, and Betsey, 1986). Blacks also perceive less social condemnation of single childbearing than do whites (Zelnik, Kantner, and Ford, 1981) and more favorable reactions from peers and their male partners to a nonmarital conception (Moore, Simms, and Betsey, 1986). Finally, the *HS&B* sample mirrors this racially distinctive pattern of attitudes: About 41 percent of blacks (but only about 23 percent of whites) say they might consider having a child out of wedlock.

Other characteristics known to affect rates of single childbearing include family socioeconomic status, the structure of the parental

family (specifically, its size and female headship), religion and religiosity (Zelnik, Kantner, and Ford, 1981; Michael and Tuma, 1985; Moore, Simms, and Betsey, 1986), characteristics of the neighborhood or area, and another family member who is a single childbearer (Hogan and Kitagawa, 1985).[1]

To pinpoint those groups with the highest rates of unwed childbearing, we explored a wide range of measures of stable characteristics of the young woman and her family background that previous research suggested as important. These included (1) characteristics of the parental family—specifically, detailed measures of family structure and current living arrangements, family income and family socioeconomic status more broadly measured, father's and mother's education and occupation, and the mother's employment history when the young woman was in high school; (2) demographic characteristics of the young woman herself—specifically race and ethnicity, region of residence, where she was born, and years of residence in the United States; and (3) certain more contemporaneous characteristics, including the young woman's self-reported religious affiliation, religiosity, frequency of attendance at religious services, political beliefs, and detailed measures of academic ability obtained through standardized testing.

Detailed analysis of each measure's separate relationship with unwed childbearing over the subsequent two years reaffirmed the central importance of race and ethnicity, as other studies have shown. Accordingly, we shall report all findings separately for blacks, whites, and Latinos (with a reminder that the last category is a heterogeneous one).[2]

Our preliminary examination of the relationships led us to use two measures of family socioeconomic status. Both are developed from the composite measure created by the *HS&B* staff, whose construction is described in App. B. (That measure combines father's and mother's

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[1]As Michael and Tuma (1985, p. 539) observe, "factors that reflect relatively unpleasant family circumstances or relatively low levels of resources seem to foster a decision to marry or become a parent early." Building on that interpretation, neighborhood or areal characteristics may reflect the prevalence of unwed childbearing, and attitudes toward it, as well as resource levels. (Recall that young black women perceived less social condemnation of unmarried mothers than did whites.) The relationship between young women's own unwed childbearing and that of others in their family may result from the latter being role models for the former. Other factors may account for early pregnancy in both—e.g., an inherited early age at menarche.

[2]Among Hispanics, there were few cases for any individual countries of origin, so we have combined all respondents reporting Spanish-speaking countries of ethnic origin into a single category. Although following certain conventions for statistical reporting, this aggregation masks substantial differences between, for example, Puerto Ricans' and Cubans' patterns and rates of unwed childbearing. The reader should keep in mind the heterogeneity of this group. See, for example, Darabi and Ortiz, 1987.

education, father's occupation, family income, and whether the family possesses each of ten consumer items.) For our purposes, we created two variants of this measure of socioeconomic status (SES). One reflects the standing of the respondent's family relative to the families of all other *HS&B* respondents, the other reflects that standing relative only to respondent families of the same race.

Our preliminary analyses also showed that the overall measure of academic aptitude (consisting of standardized subtests on vocabulary, reading, mathematics, civics, writing, and science) distinguished future single mothers within the entire sample better than any of its individual components.

Finally, our analysis of current living arrangements and subsequent unwed childbearing pointed to living in a female-headed household as the sole dimension with any substantial relationship, although only for blacks and Hispanics.[3]

In short, within racial/ethnic groups we identified three further background factors that consistently predispose to subsequent unwed childbearing: family socioeconomic status, academic ability, and living in a female-headed family (for blacks and Hispanics only). Our analysis confirms the strength and consistency of these relationships (see Fig. 3 and App. B). Rates of single parenthood are substantially higher for blacks than whites and within each racial category, for those in the lowest quartile of SES and academic ability. Finally, such rates are higher for young women from black and Hispanic female-headed than from male-headed families.

Although examined separately in Fig. 3, these factors are not independent of each other, and the joint relationship between them and single-parenthood rates is complex. We can summarize their effect by using a straightforward combination of SES, academic ability, and family structure to stratify the sophomores (separately by race) into

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[3]We examined other relationships with unwed motherhood: region of residence, foreign birth, years of residence in the United States, religious affiliation, and mother's employment history. In general, their relationships to single childbearing matched what other studies have found (e.g., Michael and Tuma, 1985). For example, young women who did not live with their mother showed higher rates of unwed childbearing than others. Rates decreased with father's years in the United States, but foreign-born young women showed lower rates than native-born. Those young women whose mothers worked full-time when they were in high school, elementary school, or younger show higher unwed childbearing rates than those whose mothers worked part-time or not at all.

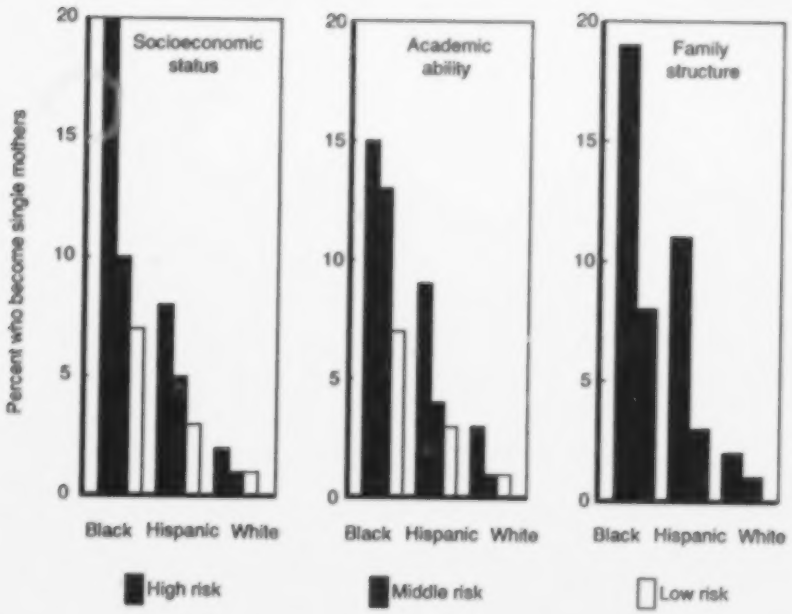

Fig. 3—Three background factors predisposing to single parenthood

what we refer to as *parenthood-risk groups*.[4] These groups form the risk scale shown in Fig. 4.

Young women with different background profiles exhibit markedly different rates of single parenthood, ranging from as high as 24 percent to as low as 1 percent for blacks and from 6.7 percent to 0.1 percent for

[4]We document the basis for this procedure, because this straightforward checklist for spotting high-risk members within an adolescent population may have other uses. Briefly, to combine SES and academic ability we assign a positive unit weight to each high-risk group (the lower SES quartile or the lower academic-ability quartile) and a negative unit weight to each low-risk group (the higher quartiles on each of these variables), and then we add the weights. To adjust further for family structure, we add a unit weight if the respondent comes from either a female-headed black or Hispanic family or an "other" family of any race. The resulting integer-valued risk scale ranges from −2 (for respondents in both the upper-SES and the upper-ability quartile but not in a female-headed or "other" family) to +3 (for those in both the lower-SES and the lower-ability quartiles and also in a female-headed black or Hispanic family or an "other" family). Further technical details are given in App. B.

whites.[5] The extreme risk groups (greatest or least risk) contain fewer cases than the other cells. Estimates within these extreme cells are less reliable than the others.

Quantifying these differences this way enables us to account for these four important preexisting characteristics using a single scale. We use this scale in our graphical presentation but include the separate components in our later multivariate analysis reported in Sec. VI.

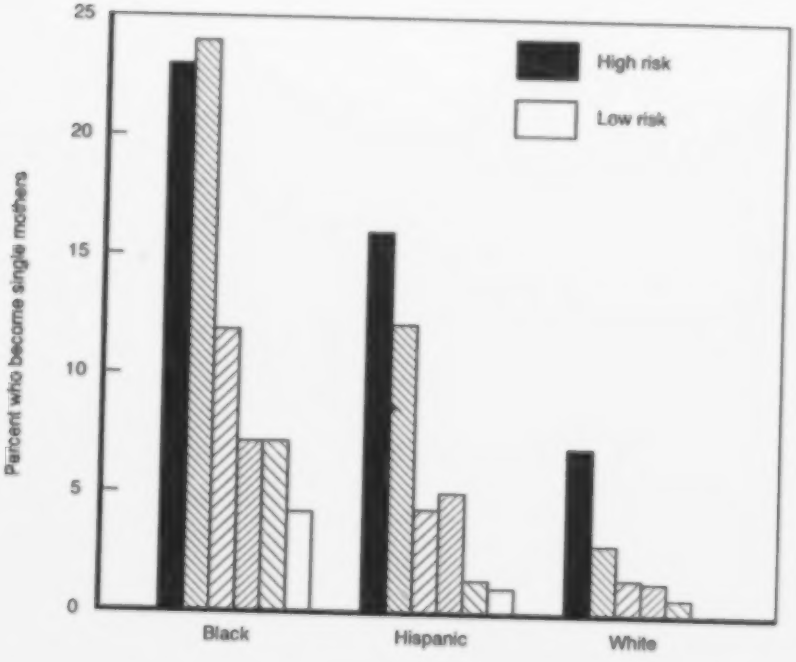

Fig. 4—Scale of parenthood risk groups

[5]Other noteworthy features of this scale (discussed in App. B) are the small proportion of missing cases that (with the exception of blacks) do not appear to differ significantly from the nonmissing ones in terms of measured rates and the roughly "bell-shaped" distribution of cases across the scale.

V. HOW SOME GIRLS IN HIGH-RISK GROUPS AVOID UNWED MOTHERHOOD

Having identified the background factors that place certain teenage women at high estimated risk of single parenthood, we now examine how other factors temper that risk.

The background profiles defined in Sec. IV differentiate rates ranging from one in a thousand (for high-ability, high-SES white respondents in intact families) to one in four (for low-ability, low-SES black girls from female-headed families). Can other factors lower rates relative to these baseline levels?

The factors we analyze below were chosen to reflect selected social and contextual influences identified in Sec. II that can be measured on *HS&B*. They are not the only influences we examined, but they are the ones that emerged as most powerful in explaining single childbearing. They pertain to: (1) parenting, (2) religious commitment, (3) the young woman's own willingness to bear a child out of wedlock, (4) the willingness of her school peers, (5) problem behavior at school, and (6) the opportunity costs of unwed childbearing. All reflect the various theoretical perspectives discussed earlier, and all are measured on the initial survey wave in 1980. The first two influences can be thought of as reflecting a set of social controls that emanate from family and church, and whose intensity may vary among individuals. The other influences may either reinforce or undermine these controls at home.

We describe how each influence can be gauged from the responses given on *HS&B* and what our separate analysis of each of them discloses. (For related results based on *HS&B*, see Hanson, Myers, and Ginsburg, 1987.)

PARENTING

The influences parents exert on their children are numerous and not easily measured. *HS&B* measures young women's *perceptions* of the parenting they receive in two distinct realms: parent-child communication and parental supervision. The former realm is reflected in the respondent's reports on how often she talks over plans and activities with her parents, and quantified in a composite variable, "TALKS." The realm of parental supervision is reflected in her reports on how closely her parents keep track of where she is and what she is doing,

and quantified in another composite variable, "TRACKS." For each realm, the composite measure was derived by factor-analyzing a set of six response items, as reported in App. C.[1]

Measures of this type have crucial limitations, as Newcomer and Udry (1985) demonstrate. Although we shall use "TALKS" and "TRACKS" as convenient labels, they should not be interpreted too literally. The "TALKS" variable indicates the quality and extent of the relationship between the respondent and her parents at a stage in her life when that relationship often is trying on both sides. In our view, a high value on "TALKS" indicates a high-quality relationship (HQR) with parents. A high value on "TRACKS" indicates how much parental supervision the respondent *experiences*, which is not necessarily what parents attempt to impose. (Respondents who report being closely supervised may either be well-behaved for that reason or elicit close supervision precisely *because* they are troublesome.)

To some extent, these two dimensions of parenting parallel two main, independent dimensions of parental behavior that, in combination, predict much of children's behavior: (1) warm versus cold, and (2) permissive versus restrictive. As summarized in Wilson and Herrnstein (1986):

> A restrictive parental style is one in which the mother or father states clear rules, monitors behavior to insure that it conforms to those rules, and reinforces compliance by the consistent and contingent use of reinforcers. Permissive parents fail to do these things, though they may imagine that they do them. . . . A warm parent is approving and supportive of the child, frequently employs praise as a reinforcement for good behavior, and explains the reasons for rules. A cold parent acts in the opposite manner, frequently displaying irritability, passiveness, or indifference and relying more on negative than on positive reinforcements.

Figure 5 (panels a and b) shows the response frequencies on each composite variable, measured at baseline. Black, Hispanic, and white respondents give remarkably similar reports: Approximately three-fifths talk to their parents "a lot" (indicative of a high-quality relationship); approximately three-quarters feel closely supervised.

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[1]The "TALKS" composite variable is based on responses to the following questions: "How often do you spend time on the following activities outside of school? . . . (g) Talking with your mother or father about personal experiences"; and "How much have you talked to the following people about planning your school program? . . . (a) Your mother; (b) Your father." The "TRACKS" composite variable is based on responses to the following questions: "Are the following statements about your parents true or false? . . . . (c) My parents (or guardians) almost always know where I am and what I'm doing"; and "(a)/(b) My mother (stepmother or female guardian) / father (stepfather or male guardian) keeps close track of how well I am doing in school."

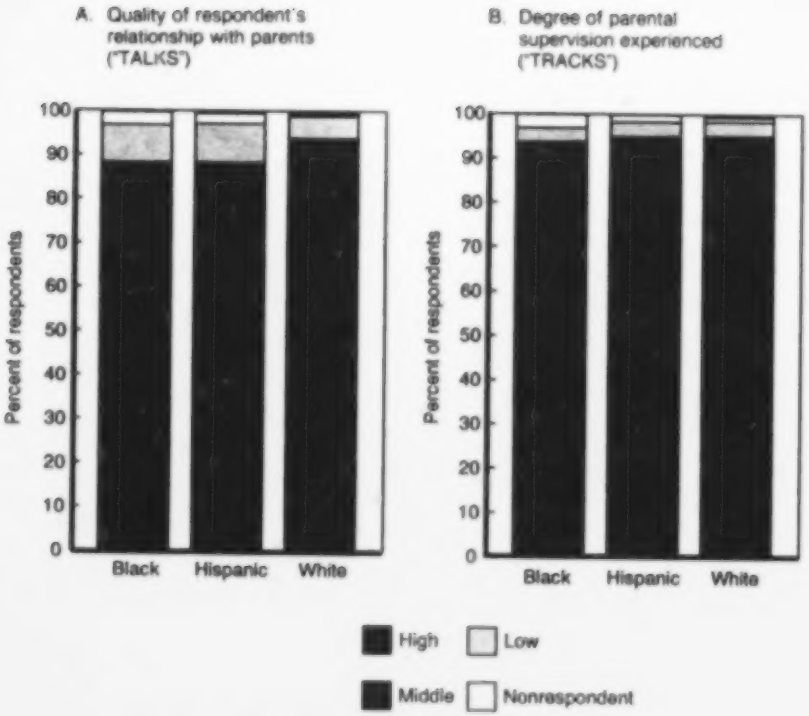


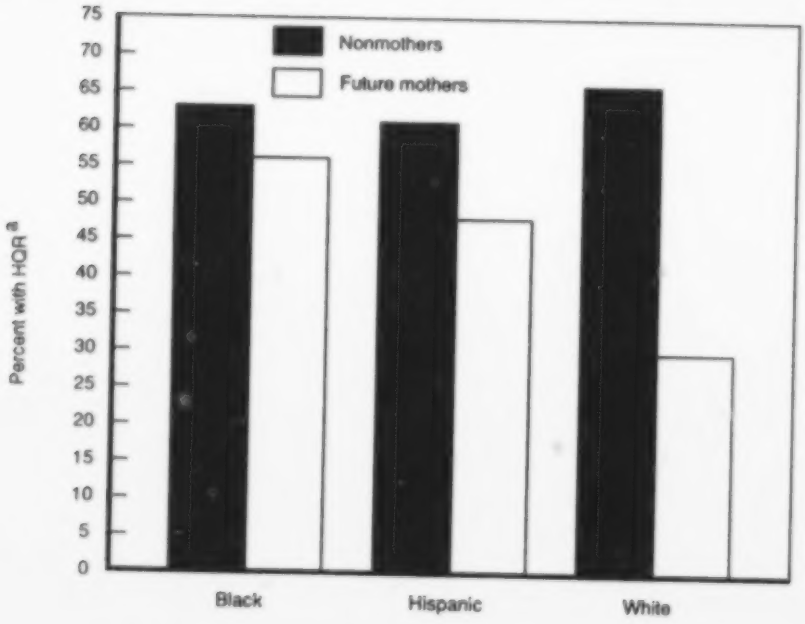
Fig. 5—Two realms of parenting

Next, we examine each variable separately to identify its distributional and direct effects on rates of single childbearing.

High-Quality Relationship

Figure 6 compares the response distributions of the future single mothers and nonmothers on "TALKS." Among whites, the two groups differ sharply: Nearly two-thirds of those who were nonmothers at follow-up evidenced a high-quality relationship with parents; fewer than one-third of future single mothers had such a relationship. Blacks and Hispanics show the same difference, although it is less pronounced.

Differences in the prevalence of HQR may stem from distinctive parenting "styles" associated with the background factors examined in Sec. IV. This possibility is reinforced by the pattern in Fig. 7, which



[a]HQR defined as respondents for whom TALKS = 1 (see App. C).

Fig. 6—Frequency of a high-quality relationship with parents among nonmothers and future mothers

compares the frequency of HQR reported by respondents at different levels on the parenthood risk scale. For whites, differences are clear-cut and striking. HQR is most common among respondents with low-risk background profiles (over four-fifths of such respondents report talking a lot) but declines progressively to only one-fourth of the respondents with the highest-risk profile. Blacks exhibit a similar, but weaker, pattern; Hispanics are indistinct. One correlate of a high-risk background, we conclude, is absence of a high-quality parent-child relationship, especially among whites.

Next, we consider whether HQR directly affects single childbearing rates. That is, do those rates vary relative to the estimated levels that background factors alone would foreshadow? The comparison between all respondents and just those with HQR is shown in Fig. 8. For most

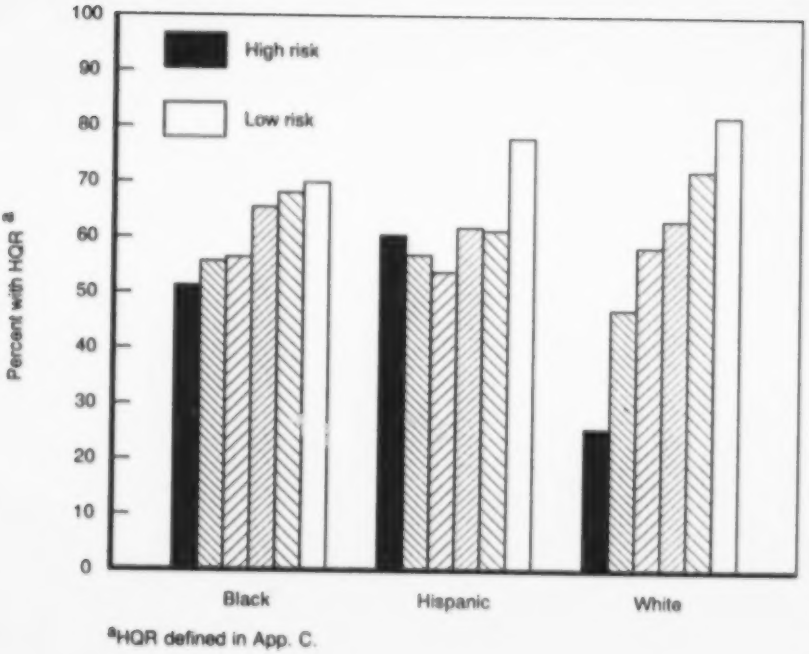


Fig. 7—Frequency of a high-quality relationship by risk group

paired comparisons, respondents who evidence a high-quality relationship with parents register a lower-than-expected rate. For example, respondents whose background characteristics alone place them at the second-highest risk level—24 per 100 for blacks, and 3 per 100 for whites—register rates of only 19 per 100 and 2 per 100, respectively, among those with HQR. This effect is consistent at all risk levels for whites; consistency cannot be determined from the small sample size for blacks.

Proportionally fewer of the teens who initially evidenced a high-quality relationship with parents ended up becoming single mothers relative to what individual backgrounds alone would foreshadow. This reduction is partly distributional: A high-quality relationship is more prevalent among lower-risk respondents. Beyond this distributional effect, a high-quality relationship at any level of risk is associated with a lower-than-expected rate of single childbearing, particularly for whites.

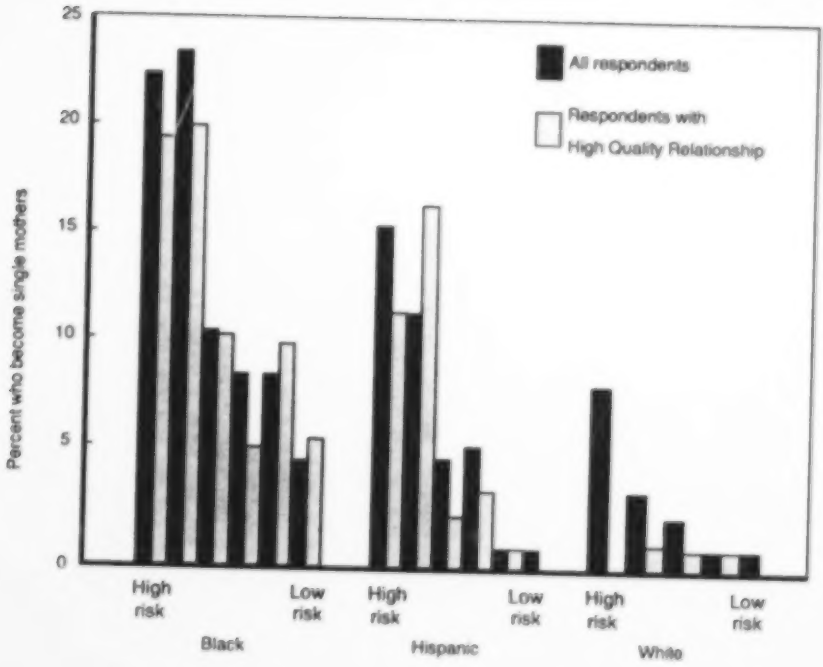
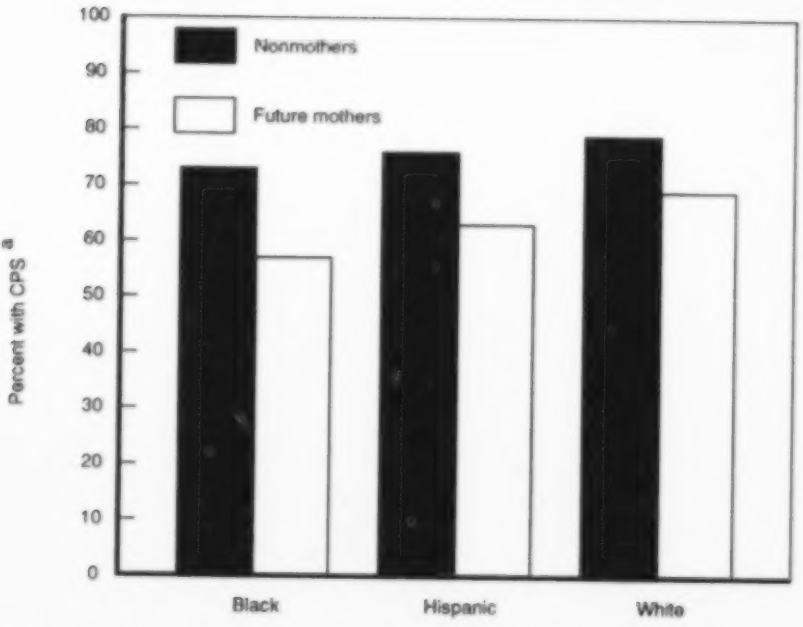


Fig. 8—Reduction in single childbearing rate by HQR, controlling for risk group

Close Supervision

Next, we examine the effects of experiencing close parental supervision variable (CPS). Figure 9 compares the response distributions of the future single mothers and nonmothers. Here again, the two groups differ, but only moderately. Among blacks, for example, 73 percent of nonmothers reported CPS, compared with only 57 percent of future single mothers. CPS is more common among respondents with low-risk background profiles, as shown in Fig. 10. This pattern is indicative of a modest distributional effect; its consistency is nearly perfect.[2] As for a possible direct effect, the data in Fig. 11 show that CPS tends to reduce single childbearing rates, but not consistently. (This

[2]The one exception (highest-risk whites) may be an artifact of the very small sample sizes at the high and low extremes of our risk scale.



[a]CPS defined as respondents for whom TRACKS = 1 (see App. C)

Fig. 9—Frequency of close parental supervision among nonmothers and future mothers

inconsistency may stem from the possibility that CPS could be elicited by a *need* for close supervision because of problematic behavior.)

In sum, one consistently influential facet of parenting appears to be the extent and quality of the parent-child relationship it engenders. Close parental supervision also matters, although not in all circumstances. Such findings are noteworthy but must be regarded as tentative, given the shallowness of these two measures. The results we have obtained warrant broader and deeper examination, using superior measures than were available to us, to test their replicability.

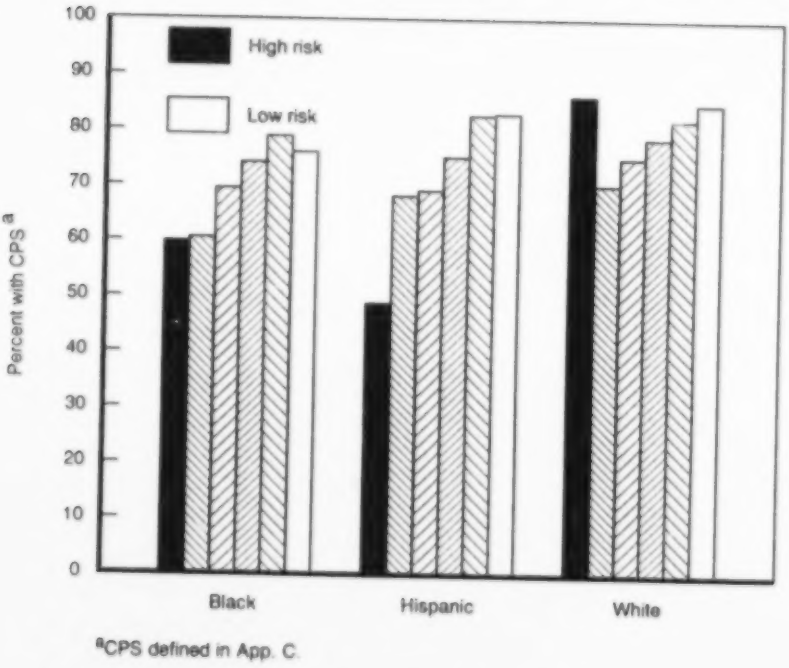


Fig. 10—Frequency of close parental supervision by risk group

INTENSITY OF RELIGIOUS COMMITMENT[3]

Religious institutions traditionally have set standards of appropriate sexual and reproductive conduct and denounced behavior that flouts those standards. Thus, the intensity of an individual's religious commitment ("religiosity") constitutes another form of social control that could deter out-of-wedlock childbearing. Religiosity, however, is likely to exert its influence in a highly complex fashion, since religious affiliations vary widely in their positions on abortion, premarital sex, and other related issues (Studer and Thornton, 1987). Moreover, certain affiliations have distinctive racial and ethnic makeups (fundamentalist Protestant affiliations, for example, have memberships that are disproportionately black).

[3]The analysis reported in this section was prepared jointly by Calvin Goldscheider of Brown University and the authors of this report.

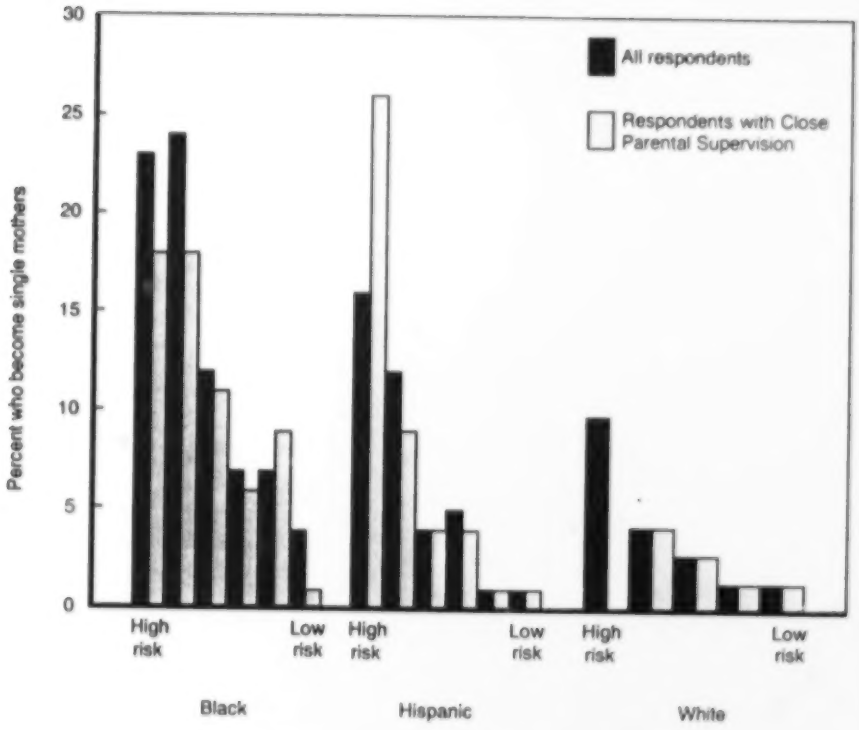


Fig. 11—Reduction in single childbearing rate by CPS, controlling for risk group

Religiosity can affect single childbearing rates in ways that may differ from one individual to another. For some young people, religious commitment delays the initiation of sex or reduces the prevalence of premarital intercourse (Marsiglio and Mott, 1986; Zelnik, Kantner, and Ford, 1981); for others, it discourages use of effective medical methods of contraception; for still others, it proscribes abortion as a means of resolving a premarital pregnancy (Studer and Thornton, 1987). In other instances, religiosity may simply proscribe childbearing outside of marriage. One or another influence may predominate among adherents to a particular religion, as the proscription against abortion does among practicing Catholics.

Three interrelated mechanisms link religion and religiosity to unwed parenthood among adolescents. The first is *religious doctrine*, which for certain religions is explicit about contraceptive usage, abortion, sexual activity, or marriage. Such doctrines are emphasized in church and internalized more deeply by more faithful adherents.[4] The second mechanism consists of *confounding background differences* owing to the socioeconomic, racial, and ethnic backgrounds of adherents to a particular religious affiliation. For example, Hispanics tend to be Catholics, and Catholics are disproportionately concentrated in lower socioeconomic levels. The third mechanism is the *association of religiosity with traditionalism and familism*. More religious individuals, for example, tend to have traditional family-oriented values, which would lower the propensity to bear a child out of wedlock. Religiosity, then, may be a proxy for traditional or conservative values that discourage nontraditional family formation. Inevitably, the overlap of religion, religiosity, and their associated background differences confounds their linkage with single parenthood.

This conceptual model suggests four propositions:

1. Rates of single parenthood should be highest for persons with no explicit religious affiliation and lowest for Catholic adherents (for whom religious doctrine proscribes childbearing outside of marriage and emphasizes marriage as the proper context for sexual activity).
2. For any given affiliation, the least religious adherents should exhibit the highest rates.
3. Both relationships should persist for blacks, Hispanics, and whites.
4. Both relationships should persist even after socioeconomic differences have been controlled for.

HS&B furnishes several potential measures of religiosity, and we rely on self-reported religiosity (responses to the question "Do you think of yourself as a religious person?"). Table 4 shows rates of single parenthood by type of religious affiliation and, within each type, by intensity of belief. Rates of single parenthood are markedly higher for unaffiliated respondents than for those with an affiliation—either Catholic or non-Catholic. This difference is for whites, Hispanics, and blacks. Also, it is lowest for black and Hispanic Catholics, but not white Catholics. Second, rates are lowest for those who report being

[4]For example, Catholicism's strongest doctrines refer to abortion and method of contraception, in that order; its positions are clear, but perhaps less salient, on premarital sexual activity and the timing of marriage.

Table 4

RATES OF SINGLE PARENTHOOD BY RACE/ETHNICITY, RELIGIOUS AFFILIATION, AND RELIGIOSITY

	Blacks	Hispanics	Whites
ALL RESPONDENTS[a]	12.2	5.0	1.3
Very religious	8.7	1.8	0.5
Somewhat religious	9.0	4.2	1.5
Not at all religious	19.7	4.6	1.5
CATHOLIC AFFILIATION[a]	6.1	3.5	1.3
Very religious	11.9	1.5	0.7
Somewhat religious	6.1	3.4	1.1
Not at all religious	1.6	3.4	2.2
NON-CATHOLIC AFFILIATION[a]	10.8	4.0	1.3
Very religious	8.6	2.2	0.4
Somewhat religious	8.9	4.3	1.7
Not at all religious	20.7	4.1	0.8
NO RELIGIOUS AFFILIATION	18.0	10.3	1.8

[a]Rates shown as totals for "All Respondents," "Catholic," and "Non-Catholic" include some individuals who gave no response concerning degree of religiosity.

"very religious," with the notable exception of black Catholics. Their rates are *highest* among the most religious.[5]

These limited comparisons illustrate the complex association between religious affiliation and religiosity and out-of-wedlock childbearing. To capture that complexity, we formulate a simple analytic model (diagrammed in Fig. 12) that posits two general relationships, the intensity of which should vary by religious affiliation.

Building on previous studies (Studer and Thornton, 1987; Zelnik, Kantner, and Ford, 1981), we posit first that religiosity discourages or postpones premarital intercourse. That effect would reduce the likelihood of a premarital pregnancy. Second, we assume that, for certain denominations, religiosity also discourages abortion. That effect would increase the likelihood of a premarital pregnancy resulting in a single-parent family. Both of these assumed relationships together could change single childbearing rates in opposite directions, depending on where a particular religious affiliation's doctrine positions its members

[5]Black Catholics also exhibit this same atypical pattern for church attendance: 22 percent of those who attended very frequently became single mothers, compared with 0.5 percent who never attended.

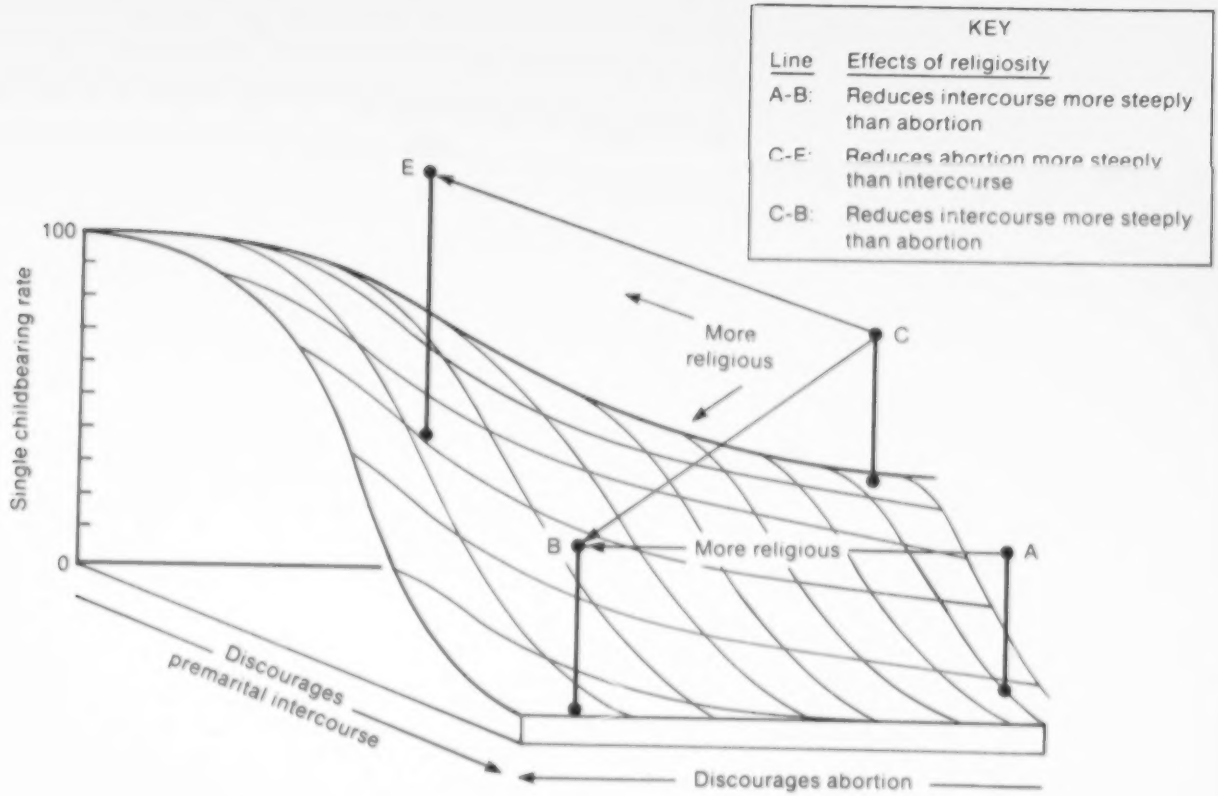


Fig. 12—Model of how religiosity affects single childbearing rate

on Fig. 12. Where deeply held religious beliefs strongly discourage premarital sexual activity, pregnancy would occur infrequently and any reduction of abortion would have a minimal effect. (This hypothetical combination is represented by the "A-B" line in Fig. 12.) By contrast, where religiosity (as with practicing Catholics) strongly discourages abortion, the suppression effect would depend on the prevailing level of sexual activity. For example, if black Catholics were distributed along the "C-E" line, religiosity would reduce abortion more steeply than it reduces sexual activity, so the level of sexual activity would predominate. This combination would generate a *positive* relationship between religiosity and single childbearing, as was noted in Table 4. If non-black Catholics, however, were distributed along the "C-B" line, their religiosity would reduce sexual activity more steeply than it reduces abortion, thereby reversing the relationship (as was observed).

In conclusion, religiosity can change rates of single parenthood, but not in a uniform or straightforward fashion. We posit the above model as one plausible explanation of how a relationship observed for one group might reverse for another. Further research (with data on sexual activity levels) would be needed to determine whether particular religious affiliations position their adherents as Fig. 12 suggests.

INDIVIDUAL WILLINGNESS

Contemporary social norms pertaining to single childbearing are in a state of flux; individuals vary in their reluctance (or willingness) to become single parents. In this section, we examine the response each individual gave to the baseline survey question asking "Would you consider having a child if you weren't married?" We interpret her response as a reflection (however indirect) of the extent to which she has internalized social norms proscribing childbearing outside marriage.

The response frequencies in Fig. 13 show that 41.3 percent of blacks, 28.9 percent of Hispanics, and 23.1 percent of whites answered either "Yes" or "Maybe" (which we classify as "willing"). Respondents who answered "No" or failed to respond are classified as "unwilling."[6] (The substantial difference by race invites several possible explanations, but we cannot address them with the data at hand.)[7]

[6]The greater frequency of missing responses among blacks (and, to a lesser extent, Hispanics) means that the "willing" percent among these two groups is probably comparatively higher relative to whites. In all subsequent analyses, we consistently treat the "missing" respondents as "unwilling."

[7]Such explanations include the possibility that certain individuals may inherit less traditional models of family-building from their own family experiences. (Studies have shown single childbearing to be more common among young women whose own sisters

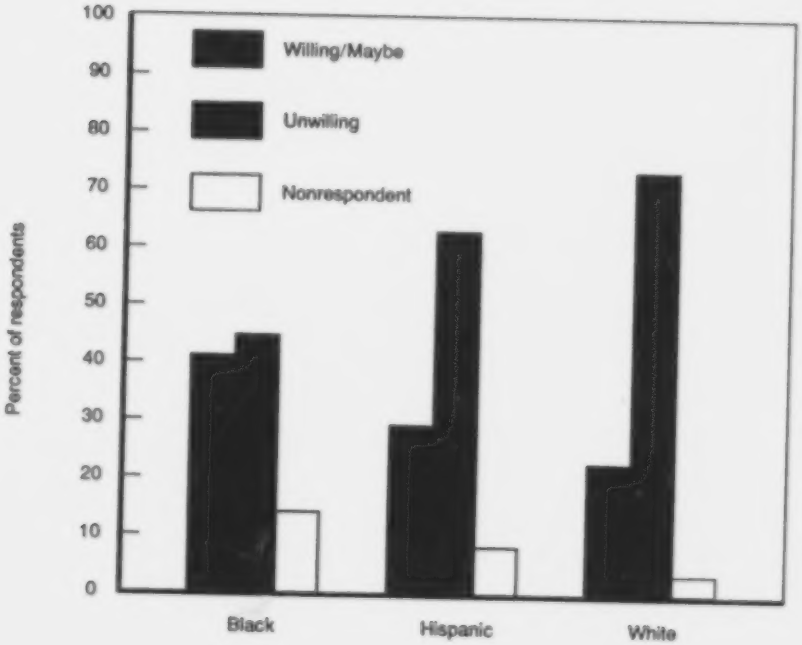


Fig. 13—Willingness to consider single childbearing

One correlate of a low-risk background is a more frequent rejection of the idea of becoming a single mother. As seen in Fig. 14, proportionately more respondents express unwillingnesss at lower levels on the parenthood-risk scale. Social norms proscribing single childbearing, then, appear to be more pervasive among respondents whose backgrounds foreshadow low risk. Expressed unwillingness is less widespread among blacks than whites at every level on the scale.

Are unwilling respondents actually less likely to become single mothers? The data in Fig. 15 indicate that they are. Those who reject

become single mothers.) Certain models, however, may reflect an individual's own adaptive strategy for accommodating to a world that offers her few marriageable men or attractive employment opportunities. Last, for some respondents, their affirmative answer to this question may be no more than an expression of adolescent disdain for the "rules" society imposes. See Furstenberg et al., 1987; Hogan and Kitagawa, 1985.

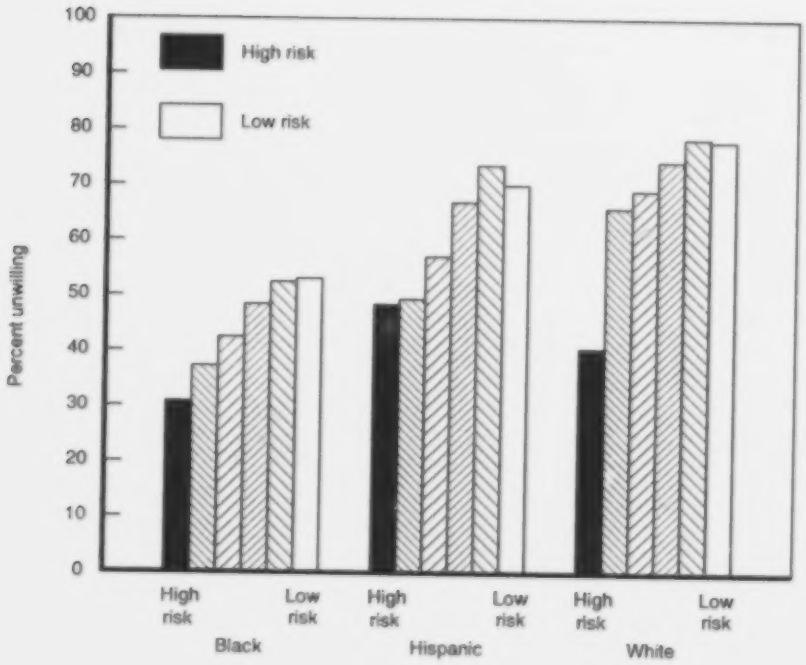


Fig. 14—Unwillingness to consider single childbearing by risk group

the idea (the three-fifths of blacks, seven-tenths of Hispanics, and three-fourths of whites who were unwilling or gave no response) tend to register sharply lower than expected single childbearing rates over the subsequent two years. Consider the second-highest risk level, for example: There, unwillingness reduces the black rate from 24.0 percent to 14.9 percent, the Hispanic rate from 12.1 to 3.5 percent, and the white rate from 2.95 to 1.70 percent. (The highest and lowest extremes on the risk scale are highly volatile owing to their very small sample sizes. For example, the zero risk level registered for the unwilling whites in the highest-risk category is based on only 11 individuals.)

The data in Fig. 15 establish an important point: Premarital childbearing is an avoidable outcome—for individuals so inclined—and not simply an "accident" that happens. Clearly, those young women who reject the idea of having a child without being married often manage

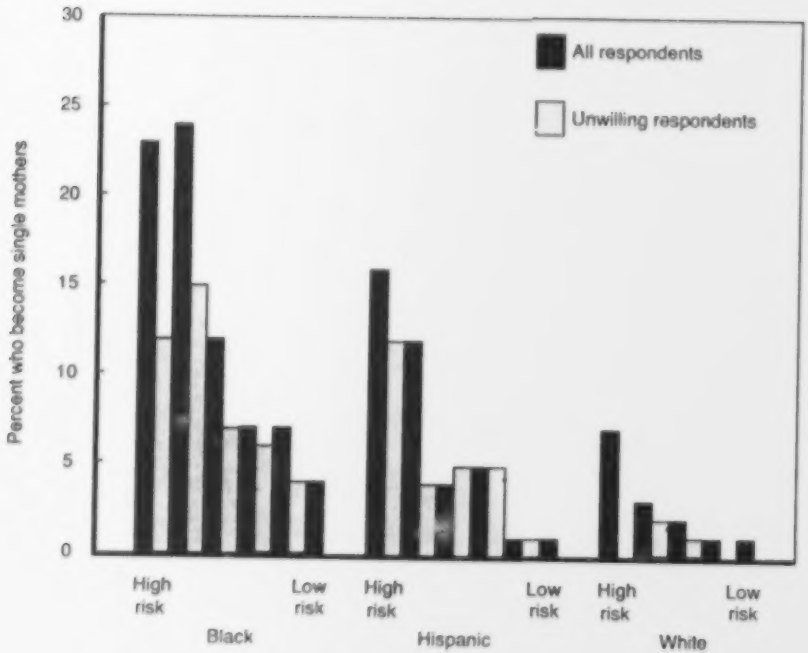


Fig. 15—Rates of unwed childbearing, by unwillingness to consider single childbearing

not to, even when they come from backgrounds that predispose them to do so.[8]

PEER MILIEU AT SCHOOL

An adolescent's peers exert strong influences on her. These influences may reinforce or undermine the various forms of social control that are rooted in family and church. One powerful source of such influence is the prevailing normative climate among her peers, which may be more accepting of unwed childbearing at some schools than at others (Furstenberg et al., 1987).

[8]How they avoid this outcome cannot be known from the *HS&B* data. It could be a later initiation, or reduced level, of sexual activity; greater contraceptive diligence; or favoring marriage as a means of resolving a premarital pregnancy.

To measure the prevailing normative peer milieu encountered at each respondent's school, we made use of the fact that the *HS&B* sample is stratified by school. This feature, as noted earlier, enables us to link each respondent to as many as 17 of her classmates, whose own expressions of "willingness" to consider single childbearing also were measured along with the respondent's views. As a measure of this milieu, we related the "willing" fraction of her school peers with the median "willing" fraction for all respondents of her race. Schools were then classified as having a more (or less) "accepting" milieu for the respondent in question.

Figure 16 shows how single childbearing rates differ by this contextual measure. The data show a consistent effect, which is sharpest for nonblack respondents. We conclude that the peer milieu at her school can influence a respondent's risk of becoming a single parent.

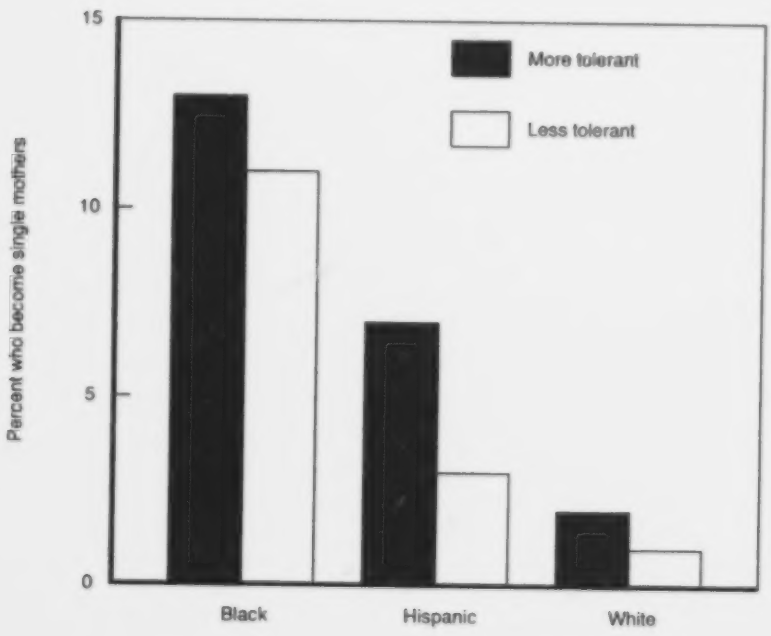


Fig. 16—Percent who become single mothers, by school milieu

PROBLEM BEHAVIOR

We also posited in Sec. II that, for young women, the constellation of "problem behaviors" identified through psychological research may include childbearing out of wedlock. To measure this effect, we examined three self-reports on such behaviors: (1) disciplinary problems in school, (2) cutting classes, and (3) absenteeism from school. For simplicity, we have combined them into a simple problem-behavior scale, which classifies respondents into one of three possible levels (see App. C).

Comparing the response distributions of the future single mothers and nonmothers (Fig. 17), we see a consistent difference between the two groups that is dramatic for whites: Whereas only 17 percent of nonmothers register problem behavior, fully 50 percent of future mothers do. Problem behavior is more common among respondents with high-risk background profiles (Fig. 18). This pattern establishes the

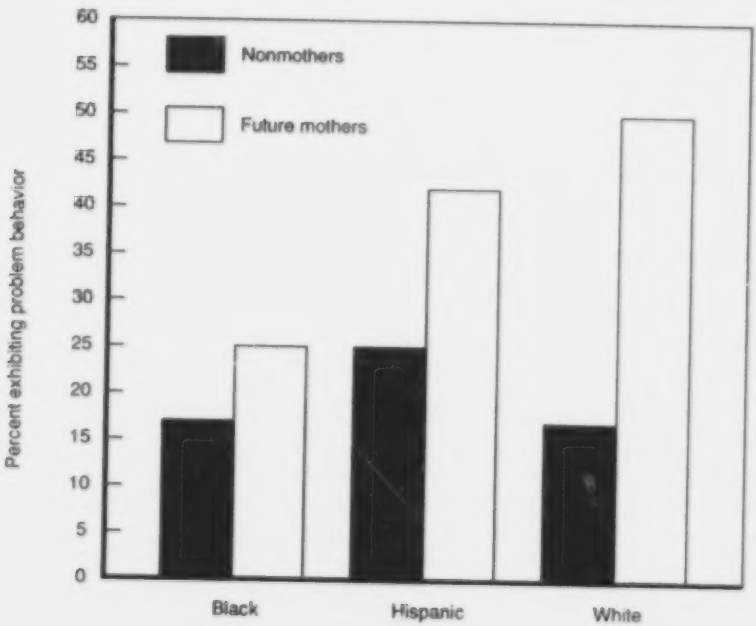


Fig. 17—Frequency of problem behavior: comparison of nonmothers and future mothers

presence of a distributional effect, one that is especially pronounced among whites.

The direct effect of problem behavior on single childbearing rates is shown in Fig. 19. Its presence, as measured here, elevates childbearing rates with almost perfect consistency at all risk levels. In the second lowest risk group, for example, white respondents whose background characteristics alone foreshadow a childbearing rate of 0.8 percent register a rate of 4.6 percent among those who exhibit problem behavior.

Our analysis, then, demonstrates that proportionally more teens who initially evidence problem behavior end up as single mothers two years later, relative to what individual backgrounds alone would foreshadow. The increase here is partly distributional (especially among whites) but arises through a strong direct effect. Theoretically, these findings affirm the relevance of the underlying psychologically based theory and support its inclusion within the broader interpretation of early

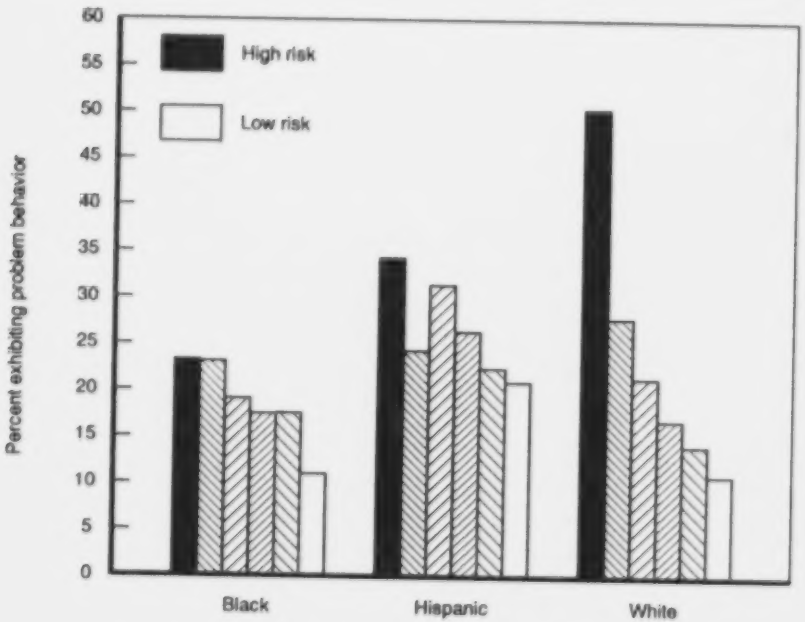


Fig. 18—Frequency of problem behavior by risk group

premarital childbearing. Practically, the problem-behavior constellation is identified as a distinct, readily measurable factor for use in defining the psychological "profile" of prospective teenage single childbearers.

OPPORTUNITY COSTS

If problem-behavior theory accounts for the single childbearing of some teens, economic theory affords a complementary perspective on that of others. It posits that teenagers with the most to lose by becoming single mothers should be least prone to do so. To measure this effect, we identified several proxy measures of each respondent's potential "opportunity costs" of becoming a single teenage mother, specifically what the woman would forgo by way of furthering her education. The measures reflect two elements in her future educational plans:

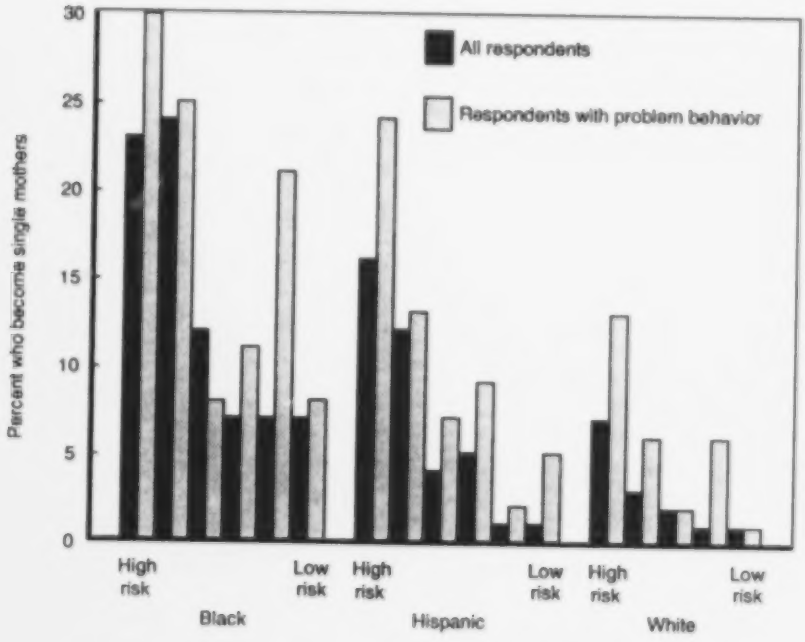
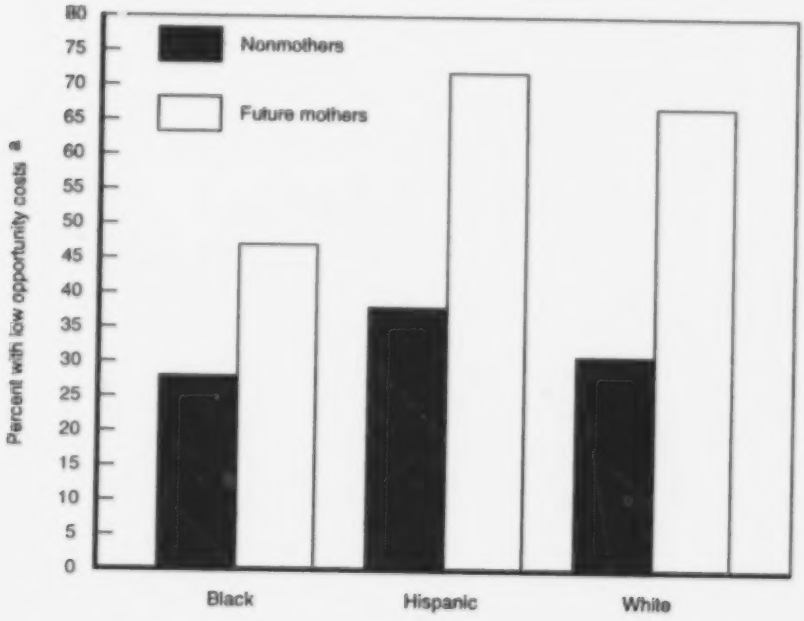


Fig. 19—Increase in single childbearing rate by problem behavior, controlling for risk group

whether she expects to graduate from high school and to continue on in college, and what level of education she expects to attain. Opportunity costs would be higher for, say, an aspiring college graduate than for someone who plans only to finish high school. These two variables formed a single, well-behaved "opportunity cost" scale with three levels (described in App. C).

The response distributions of future single mothers and nonmothers (Fig. 20) reveal a marked difference between the two groups, strongest for whites. Not surprisingly, low opportunity costs are closely tied to background risk (Fig. 21), which means that the distributional effect here is quite pronounced. Nonetheless, we still find a strong direct effect of low opportunity costs, shown in Fig. 22. Although not perfectly consistent, the effect is substantial. It underscores an important point: Regardless of race and background, young women who as



[a]Defined as respondents for whom opportunity costs scale = 0 (see App. C).

Fig. 20—Frequency of low opportunity costs: comparison of nonmothers and future mothers

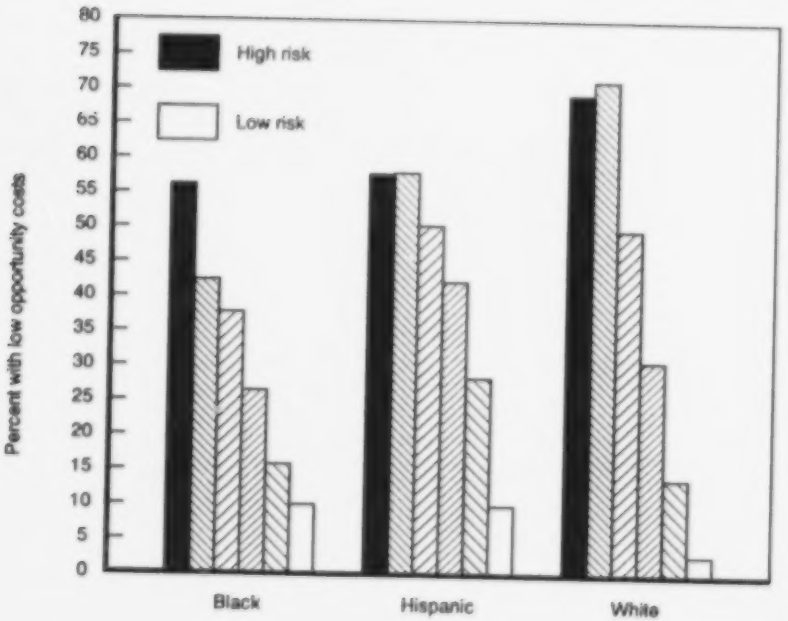


Fig. 21—Frequency of low opportunity costs by risk group

sophomores expect to continue their education are less likely to become single mothers over the next two years. As with our previous findings on problem behavior, these results affirm the relevance of the underlying economic perspective on teenagers' reproductive behavior and support its inclusion within our conceptual framework. From a policy perspective, these results suggest that one strategy for reducing rates of single childbearing is to heighten teenagers' awareness and perceptions of the opportunity costs they would incur by becoming single mothers.

SUMMARY

In this section we have examined certain influences capable of tempering single parenthood rates: how each factor alters such rates relative to expected baseline levels (which range from as low as 1 per

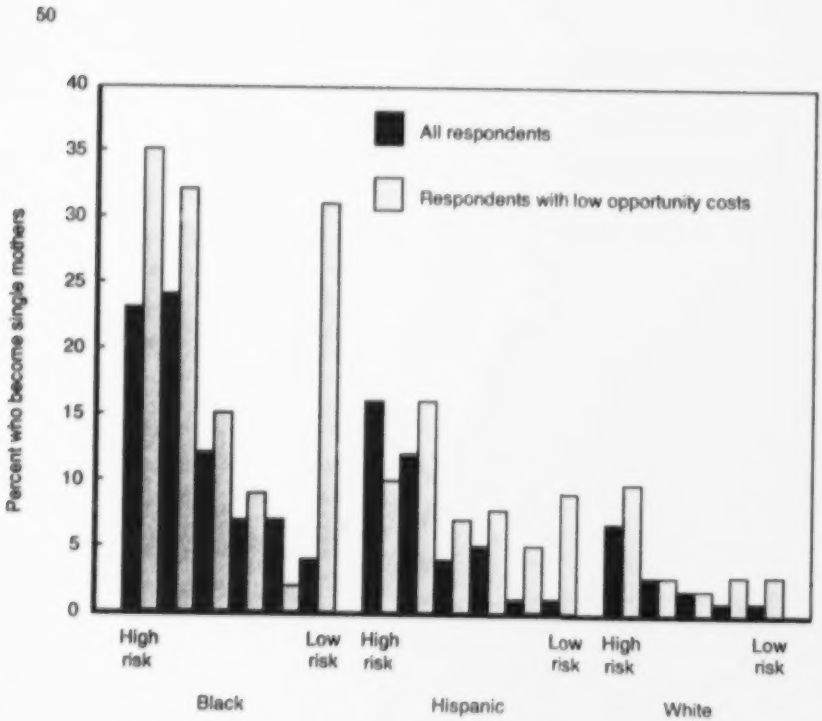


Fig. 22—Increase in single childbearing rate by low opportunity costs, controlling for risk group

1,000 to as high as 1 in 4). The quality of the parent-child relationship is consistently associated with lower than expected rates. Close parental supervision has a similar but less consistent relationship. Religiosity displays a clearly discernible influence on overall rates, but the effect is not uniform. Still, we can safely conclude that among some segments of the population religiosity can be powerfully influential. The data show that young women who themselves reject the idea of having a child without being married often manage not to, even when they come from backgrounds that predispose them to do so. The prevailing peer milieu a respondent encounters at her school also conditions her propensity to become a single mother. A higher than expected proportion of young women who initially had symptoms of problem behavior became single mothers thereafter. Finally, we found that those young women who expect to continue their education (hence have more to lose in the future by becoming single mothers) are less likely to bear a child out of wedlock.

Each of the above factors by itself appears to temper single childbearing rates and for plausible reasons. In reality, though, such factors never operate in a vacuum—they are interconnected. Teens who enjoy a high-quality relationship with their parents may also tend to be more deeply religious, or to associate with school peers who reject childbearing before marriage. To estimate any one factor's importance, therefore, we must control for the influences of all the others. Our multivariate analysis presents such estimates and the interpretations they suggest.

VI. MULTIVARIATE ANALYSIS

INTRODUCTION

A fundamental premise of our study has been that single teenage childbearing, regardless of race or ethnicity, arises out of a common process. In view of the pervasive racial and ethnic differences disclosed in most data, we have estimated a series of models separately for black, white, and Hispanic sophomores to explore this issue. We begin with the simplest models and elaborate them by adding theoretically important variables identified in Sec. II.

The simplest model includes only background, social controls, and peer willingness. First, we add the young woman's own willingness to consider single childbearing, then measures of opportunity costs and "problem behavior." (Table 5 defines these variables and provides their means and standard deviations.) We estimate each model first for the total sample, including dummy variables for race or ethnic group (Table 6); then separately for each group (Table 7).

Our analysis also explored two sets of measures of the young woman's academic ability and the socioeconomic status of her family of origin. One set reflects her ability and SES compared with those of all cases in the sample, regardless of race or ethnicity (not race-specific). We identify those individuals who ranked in the upper and lower quartiles of the distribution of academic ability and SES for all cases. Thus, an individual was classified as "low SES" if she ranked in the lowest quartile of all the *HS&B* sophomore women. The other set of measures ranked ability and SES relative only to other respondents of the same race or ethnicity. Here, an individual was classified, for example, as "low SES (race-specific)," meaning that for a young black woman, she was in the lowest quartile of all black respondents on SES; for a young Hispanic woman, she was in the lowest quartile of all Hispanic women on SES; and likewise for whites.

Comparing the race-specific and nonrace-specific means for each variable shows how the two types of measures differ. Not surprisingly, many more of the black than of the white respondents are disadvantaged on the nonrace-specific SES and academic ability measures, which means that a low (or high) ranking on each carries a different meaning for blacks than for whites. Indeed, that difference is why we also use the race-specific variants. Still, the differences in each group's average ability and SES mean that low-ability and low-SES young women—measured relative to their own group—actually are more

Table 5

DEFINITIONS, MEANS, AND STANDARD DEVIATIONS OF VARIABLES

Variable[a]	Definition	Mean (Standard Deviation)[b]		
		White	Black	Hispanic
Unwed	Birth while unmarried	.011	.094	.034
Family Background				
SES low	Lowest quartile[c]	.183	.476	.455
SES high	Upper quartile[c]	.290	.111	.132
SES low (race specific)		.249	.251	.247
Academic ability	HS&B composite from standardized test			
Ability low	Lower quartile[c]	.167	.553	.502
Ability high	Upper quartile[c]	.306	.079	.073
Nontraditional family	Female-headed or "other" family	.007	.392	.187
Cuban				.074
Puerto Rican				.076
Social Controls				
TALKS		.656	.642	.610
TRACKS		.792	.739	.779
DEVOUT		.130	.106	.123
Peer & Own Willingness				
Peer will	Percent of peers in same schools willing to consider unwed birth	.245 (.144)	.352 (.188)	.260 (.149)
Own willingness	Personally willing to consider unwed birth, yes or maybe	.219	.416	.263
Opportunity Costs				
Costs1	Thinks will get 2+ yrs. college	.583	.601	.483
Problem1	Disciplinary problems in school	.116	.171	.195
Problem2	Cuts classes	.237	.224	.257
Problem3	Unexcused absences from school	.294	.343	.404

[a] Standard deviations for continuous variable only.
[b] Dummy variables, unless otherwise noted, scored 1 if yes, 0 otherwise.
[c] Relative to own race/ethnic group.

Table 6

COMBINED MODELS WITH NONSPECIFIC MEASURES OF SES AND ABILITY

Variable	Definition	Model 1	Model 2	Model 3
Mean		0.0288		
Race/ethnicity				
Black		0.0379[a]	0.0373[a]	0.0451[a]
Hispanic		0.0183[a]	0.0180[a]	0.0193[a]
Family Background				
Socioeconomic status[b]	HS&B composite			
SES low	Lowest quartile	0.0081[a]	0.0080[a]	0.0050
SES high	Upper quartile	−0.0071	−0.0066	−0.0024
Academic ability[b]	HS&B composite from standardized test			
Ability low	Lowest quartile	0.0253[a]	0.0252[a]	0.0186[a]
Ability high	Upper quartile	0.0030	0.0031	0.0092
Nontraditional family	Female-headed or "other" family	0.0247[a]	0.0241[a]	0.0230[a]
Cuban		0.0144	0.0163	0.0211
Puerto Rican		0.0007	0.0017	0.0028
Social Controls				
TALKS		−0.0181[a]	−0.0176[a]	−0.0149[a]
TRACKS		−0.0069[a]	−0.0061[c]	−0.0015
DEVOUT		−0.0164[a]	−0.0156[a]	−0.0142[a]
Peer & Own Willingness				
Peer will	Percent of peers in same schools willing to consider unwed birth	0.0306[a]	0.0140	0.0155[c]
Own willingness	Personally willing to consider unwed birth, yes or maybe		0.0165[a]	0.0127[a]
Opportunity Costs				
Opportunity Costs 1	Thinks will get 2+ yrs. college			−0.0282[a]
Problem Behavior				
Problem1	Disciplinary problems in school			0.0045
Problem2	Cuts classes			0.0055
Problem3	Unexcused absences from school			0.0137[a]

N = 12,905

[a] $p < .05$.
[b] SES and ability relative to all race or ethnic groups combined.
[c] $.05 < p < .10$.

Table 7

COMBINED MODELS WITH GROUP-SPECIFIC MEASURES OF SES AND ABILITY

Variable	Definition	Model 1	Model 2	Model 3
Mean		0.0288		
Race/ethnicity				
Black		0.0527[a]	0.0520[a]	0.0548[a]
Hispanic		0.0310[a]	0.0305[a]	0.0270[a]
Family Background				
Socioeconomic status[b]	HS&B composite			
SES low	Lowest quartile	0.0123[a]	0.0121[a]	0.0093[a]
SES high	Upper quartile	−0.0068	−0.0067	−0.0037
Academic ability[b]	HS&B composite from standardized test			
Ability low	Lowest quartile	0.0172[a]	0.0175[a]	0.0121[a]
Ability high	Upper quartile	−0.0030	−0.0024	0.0038
Non-traditional family	Female-headed or "other" family	0.0231[a]	0.0224[a]	0.0217[a]
Cuban		0.0118	0.0139	0.0192
Puerto Rican		0.0019	0.0033	0.0036
Social Controls				
TALKS		−0.0176[a]	−0.0171[a]	−0.0143[a]
TRACKS		−0.0065[a]	−0.0056[c]	−0.0010
DEVOUT		−0.0167[a]	−0.0157[a]	−0.0139[a]
Peer & Own Willingness				
Peer will	Percent of peers in same schools willing to consider unwed birth	0.0285[a]	0.0117	0.0139
Own willingness	Personally willing to consider unwed birth, yes or maybe		0.0169[a]	0.0129[a]
Opportunity Costs				
Opportunity Costs 1	Thinks will get 2+ yrs. college			−0.0285[a]
Problem Behavior				
Problem1	Disciplinary problems in school			0.0046
Problem2	Cuts classes			0.0055
Problem3	Unexcused absences from school			0.0143[a]
N=12,905				

[a] $p \leq .05$.
[b] SES and ability relative to own race or ethnic groups.
[c] $.05 < p < .10$.

disadvantaged if they are black or Hispanic than if they are white. Likewise, high-ability and high-SES whites actually are more advantaged relative to other race or ethnic groups than the nonrace-specific measures indicate.

We estimate each of our logistic regression models twice, first using nonrace-specific measures and then using race-specific ones. The transformed coefficients shown are similar to regression coefficients in interpretation.

COMBINED MODEL

The models estimated for all racial and ethnic groups combined, shown in Tables 6 and 7, display strong effects for each type of influence on unwed childbearing. Young women from families with low SES are more likely to become single mothers than others, as are those with low academic ability. This observation generally holds for both race-specific and nonrace-specific measures of ability and SES. Coming from a family in the lower quartile of SES raises the chances of unwed childbearing by from one-half percentage point to just over 1 percentage point. Low academic ability has a somewhat larger effect. Coming from a female-headed or "other" family increases those chances by 2.2 to 2.4 percentage points.

Social controls appear to operate primarily through the TALKS and DEVOUT measures; the effect of TRACKS is weaker and, in Model 3, insignificant. Each of these two components of social controls, then, reduces a young woman's chances of single parenthood by 1 to 2 percentage points relative to her counterpart for whom those controls are missing.

The data in Tables 6 and 7 also show effects for both *peer* willingness and, in models 2 and 3, the individual's *own* willingness to consider single childbearing. (In the latter two models, the effects of peer willingness shrink with the addition of own willingness, because of the correlation between the two measures.) The young woman's own willingness heightens the chances of single parenthood by 1 to 2 percentage points. As hypothesized, however, planning to go to college for two or more years reduces those chances by nearly 3 percentage points. Finally, respondents who register unexcused absences from school (an indicator of problem behavior) also exhibit higher chances than do their counterparts without reported problem behaviors.

RACE OR ETHNIC MODELS

The model in Tables 6 and 7 allows race and ethnicity to affect the likelihood of single parenthood. It estimates the effects of background factors, peer milieu, and social controls, net of each other. Under the assumptions of this model, each factor can be seen to have a significant effect in the expected direction. This model shows that being black increases chances of unmarried motherhood by about 4 to 5 percentage points, after the other factors are taken into account, and being Hispanic raises these chances by about 2 to 3 percentage points.

This model has several limitations, the most important being that it affords no test of whether the effects displayed overall are the same for each racial or ethnic subgroup. We have previously noted the wide divergence between black and white unwed childbearing rates and their clearly different patterns of marriage and childbearing generally. Our premise that the *process* leading to unmarried childbearing is the same for each individual group is no more than a hypothesis. We can see if this is so with these same models, estimated separately for each subgroup (Tables 8 and 9).

As before, model 1 includes the family background measures (SES, academic ability, and female-headed family structure); the three measures of social controls (TALKS, TRACKS, and DEVOUT); and the peer context (PEER WILL). We then add personal willingness (OWN WILLING) and measures of opportunity costs (COLLEGE2+) and problem behaviors (DISCIPLINARY, CUTS CLASS, ABSENT). We organize our discussion of these results around the variables of interest in the final model (model 3), noting where the conclusions change for different models.

First, we discuss the effects of ability and family SES, measured nonrace-specifically (Table 8) and race-specifically (Table 9). When measured relative to all others, the family SES of an individual has no effect on her chances of bearing a child out of wedlock, whether she is black, Hispanic, or white. When measured race-specifically, however, strong effects emerge for blacks and Hispanics. For blacks, the pattern is especially striking: Models 2 and 3 show that the chances of becoming an unwed mother are over 6 percentage points higher for low-SES (race-specific) blacks than for other blacks. For Hispanics, the effects of SES are smaller, and they disappear when opportunity costs and problem behaviors are held constant. Whites again show no effect of family SES on the likelihood of becoming an unmarried mother.

The black and Hispanic young women identified as disadvantaged relative to those of their own group are profoundly poor. Our findings for blacks suggest that the poorest among them, who are extremely

Table 8

GROUP-SPECIFIC MODELS WITH NONSPECIFIC MEASURES OF SES AND ABILITY

	Model 1			Model 2			Model 3		
VARIABLE	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Mean	0.0133	0.1158	0.0479						
Family background[a]									
SES-low	0.0042	0.0234	0.0121	0.0041	0.0233	−0.0120	0.0019	0.0126	0.0051
SES-high	−0.0011	−0.0484	−0.0075	−0.0010	−0.0462	−0.0075	0.0012	−0.0423	0.0003
Ability low	0.0169[b]	0.0588[b]	0.0290[b]	0.0170[b]	0.0580[b]	0.0291[b]	0.0139[b]	0.0300	0.0224[b]
Ability high	0.0041	−0.0043	0.0050	0.0045	−0.0070	0.0051	0.0082[b]	−0.0025	0.0133
Nontraditional family	0.0009	0.0849[b]	0.0518[b]	−0.0010	0.0839[b]	0.0519[b]	−0.0046	0.0770[b]	0.0561[b]
Cuban			0.0197			0.0196			0.0272
Puerto Rican			0.0013			0.0012			0.0012
Social Controls									
TALKS	−0.0160[b]	−0.0203	−0.0196[b]	−0.0157[b]	−0.0185	−0.0196[b]	−0.0142[b]	−0.0105	−0.0168[c]
TRACKS	−0.0004	−0.0482[b]	−0.0087	0.0007	−0.0501[b]	−0.0089	0.0038	−0.0372[b]	0.0019
DEVOUT	−0.0098[c]	−0.0271	−0.0444[b]	−0.0081	−0.0271	−0.0444[b]	−0.0049	−0.0314	−0.0473[b]
Peer & Own Willingness									
Peer will	0.0343[b]	0.0249	0.0267	0.0217[b]	−0.0312	0.0280	0.0188[b]	−0.0209	0.0403
Own willing				0.0112[b]	0.0595[b]	−0.0013	0.0090[b]	0.0537[b]	−0.0082
Opportunity Costs									
Opportunity Costs 1							−0.0138[b]	−0.0976[b]	−0.0434[b]
Problem Behavior									
Disciplinary							−0.0004	0.0202	0.0173
Cuts Class							0.0059[b]	0.0014	−0.0036
Absent							0.0105[b]	0.0296[c]	0.0212[b]
N=	9010	1705	2188						

[a]SES and ability relative to all race or ethnic groups combined.
[b]$p \leq .05$.
[c]$.05 < p < .10$.

Table 9

GROUP-SPECIFIC MODELS WITH GROUP-SPECIFIC MEASURES OF SES AND ABILITY

VARIABLE	Model 1			Model 2			Model 3		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Mean	0.0133	0.1158	0.0479						
Family Background[a]									
Family Background[a]									
SES-low	0.0012	0.0675[b]	0.0172[c]	0.0012	0.0665[b]	0.0172[c]	−0.0015	0.0619[b]	0.0132
SES-high	−0.0019	−0.0206	−0.0139	−0.0019	−0.0202	−0.0138	0.0001	−0.0119	−0.0080
Ability low	0.0151[b]	0.0015	0.0408[b]	0.0154[b]	0.0037	0.0408[b]	0.0123[b]	−0.0121	0.0350[b]
Ability high	0.0041	−0.0421[c]	0.0032	0.0046	−0.0388[c]	0.0032	0.0080[b]	−0.0139	0.0084
Non traditional family	−0.0026	0.0798[b]	0.0474[b]	−0.0052	0.0785[b]	0.0474[b]	−0.0086	0.0729[b]	0.0511[b]
Cuban			0.0148			0.0147			0.0024
Puerto Rican			0.0046			0.0044			0.0233
Social Controls									
TALKS	−0.0163[b]	−0.0176	−0.0186[c]	−0.0160[b]	−0.0164	−0.0186	−0.0146[b]	−0.0087	−0.0158
TRACKS	−0.0005	−0.0449[b]	−0.0055	0.0006	−0.0462[b]	−0.0057	0.0039	−0.0332[b]	0.0047
DEVOUT	−0.0096[c]	−0.0250	−0.0454[b]	−0.0080	−0.0242	−0.0455[b]	−0.0047	−0.0269	−0.0477[b]
Peer & Own Willingness									
Peer will	0.0341[b]	0.0252	0.0169	0.0214[b]	−0.0303	0.0187	0.0193[b]	−0.0189	0.0325
Own willing				0.0115[b]	0.0590[b]	−0.0018	0.0092[b]	0.0[illegible]8[b]	−0.0084
Opportunity Costs									
Opportunity Costs 1							−0.0140[b]	−0.1014[b]	−0.0403[b]
Problem Behavior									
Disciplinary							−0.0012	0.0218	0.0167
Cuts Class							0.0058[b]	0.0041	−0.0032
Absent							0.0112[b]	0.0302[c]	0.0203[b]
N=	9010	1705	2188						

[a]SES and ability relative to own race or ethnic group.
[b]$p \leq .05$.
[c]$.05 < p < .10$.

disadvantaged relative to young women as a whole, may see less opportunity in their own futures, hence less to lose by becoming single mothers. We conclude that (1) SES has a powerful influence, at least for blacks and Hispanics, which is discernible only on race-specific measures of SES; and (2) being relatively disadvantaged on SES heightens the chances of unmarried motherhood, but being relatively advantaged does not reduce those chances.

For explaining unmarried motherhood, socioeconomic status is best measured relative to that of other young women in the young woman's race or ethnic group. Academic ability, by contrast, is best measured relative to all young women. Table 8 shows strong and consistent effects of low academic ability relative to all others for all groups. The effect is larger for blacks than for whites or Hispanics, but taking plans for college into consideration eliminates this effect. In fact, for blacks but not for whites or Hispanics, low academic ability seems to operate entirely through discouraging plans for college. For whites and Hispanics, controlling for plans for college (opportunity costs) reduces but does not eliminate the effect of low tested academic ability. Perhaps low ability young women are less effective contraceptors, are less able to evaluate the risks of unprotected intercourse, or believe that they have less to lose in the labor market by having a child while an unmarried teen.

We can only speculate on why SES, but not academic ability, has effects that must be measured on a race-specific index. Academic performance is measured largely by scores on standardized tests. Thus, a young woman's life chances, and her perceptions of those chances, may depend on her academic ability relative to *all* her contemporaries. In particular neighborhood and school settings, by contrast, individuals may compare their socioeconomic standing with that of others they encounter on a regular basis.

The results in Tables 8 and 9 reveal several important differences in the effects of other factors by race or ethnicity. One striking difference is the effect of living in a female-headed or "other" family. This effect is statistically significant for black and Hispanic teens and similar in magnitude for both; white teens, by contrast, exhibit no such effect. This difference may emanate from the distinctly different etiology of nontraditional families for these groups (divorce predominating among whites, but out-of-wedlock childbearing predominating among blacks).

The process leading to unwed parenthood differs for black, white, and Latino teens in another way: Each race or ethnic group responds to a distinctive source of social control. For blacks, the effect of close parental supervision (TRACKS) is strongest; for whites, a high-quality relationship (TALKS) is strongest; for Hispanics, religiosity

(DEVOUT) emerges as most powerful. Only *one* such mechanism of social control predominates for each group—a result that surely merits further study.

The next set of variables in Table 7 reflects peer willingness and own willingness to consider childbearing out of wedlock. The attitudes of the teen's school peers have a strong and significant effect for white teens; Hispanic teens show a statistically insignificant effect, but roughly the same magnitude as that of whites. For both of these groups, controlling for the respondent's own attitude does not eliminate the effect of peer willingness, but it weakens it somewhat for whites. Blacks, by contrast, seem unaffected by peer attitudes, whether we take their own attitudes into account or not (model 1 versus model 2).

The respondent's own willingness also displays racial and ethnic differences in its effect, once peer willingness has been controlled for. For both whites and blacks, a young woman's own willingness to consider single childbearing increases her chances of actually doing so within the next two years, by about 1 percentage point for whites and by fully 5 to 6 percentage points for blacks. Hispanic teens display no such effect.

These results highlight certain distinctive patterns in how peer attitudes toward unwed childbearing, and the individual's own attitudes, can predispose the actual outcome. For white teens, both peer and own attitudes matter, whereas for black teens only the latter do. For Hispanic teens, we can only state that were the peer willingness effect significant, it would be the only noteworthy one. For any of these groups our results for peer attitudes do not arise from the relationship between own and peer attitudes, because these results always obtain whether or not we control for own attitudes (model 1 versus model 2). Apparently, peer willingness and the respondent's own willingness constitute distinct domains that exert separate influences on a young woman's propensity to become a single mother.

Next, we consider the effects of opportunity costs. We hypothesize that those young women who had the most to lose by becoming unmarried mothers while in their teens would be least likely to do so. To test this hypothesis, we included a measure of whether the respondent expected to finish at least two years of college (opportunity costs 1). Our reasoning is that the need to care for a young child would hamper college plans, thereby exacting higher costs for those respondents who foresaw more schooling.

Our measure of opportunity costs confirms the hypothesized effects for all three subgroups, but the most striking result is the difference in the size of the coefficients. College plans have the smallest effect for whites, a larger effect for Hispanics, and a still larger one for blacks.

Indeed, the presence of college plans inhibits single childbearing for blacks by nearly 10 percentage points. This effect is the strongest one we have measured, and it carries important policy implications.

Our final hypothesis pertains to unwed childbearing viewed as one possible element in a constellation of problem behaviors. The psychological literature suggests that individuals who manifest distinctive types of "problem behaviors" in school may also tend to engage in single childbearing as a variant of that behavioral constellation. *HS&B* provides three relevant self-reported behaviors: problems at school, cutting classes, and unexcused absences from school. The last of these measures shows the strongest and most consistent relationship with unwed childbearing: Unexcused absences increase the likelihood of single parenthood by 1 to 3 percentage points, depending on the group considered (although the effect narrowly misses reaching statistical significance for blacks). This finding supports the hypothesis that, for at least some young women, single childbearing may be one expression of the "problem behavior" constellation.

SUMMARY

Summing up, each type of measure we have examined can be seen to influence a young woman's chances of becoming a single mother during mid-adolescence. Her family background, the forms of social control she experiences, her own attitudes and those of her peers toward unwed childbearing, opportunity costs, and manifestations of problem behaviors all operate in the directions we hypothesized.

We also find that this apparent consistency masks interesting and important differences in how white, black, and Hispanic young women respond to these factors. For example, low family socioeconomic status (race-specific) substantially increases the chances that a black teen becomes a single mother; it has smaller effects for Hispanic teens and no effect for whites. Coming from a female-headed or "other" nontraditional family increases the chances of single childbearing for black and Hispanic teens, but not for whites. Furthermore, the three groups respond to distinctly different forms of social control: Parent-child communication emerges as most important for whites, parental supervision for blacks, and religiosity for Hispanics. Peer attitudes toward single parenthood matter for whites but not blacks; the individual's own attitudes matter for blacks and whites but not Hispanics.

Although college plans reduce the likelihood of single parenthood for all groups, this effect is most pronounced for blacks. Manifestations of problem behavior increase that likelihood for whites and Hispanics, but not to any detectable extent for blacks.

VII. CONCLUSIONS AND IMPLICATIONS

Teenage women who form single-parent families pose both a challenge and a dilemma for public policy. The challenge is to find workable strategies for preventing the phenomenon and, where prevention fails, for dealing with its consequences. The dilemma stems from the existence of ideological divisions over how (or even whether) to implement the preventive measures policymakers have at their disposal. Contraception, sex education, school-based clinics, and abortion are matters on which Americans hold strong views and are deeply divided. Our research can speak only to the challenge; the dilemma is a matter for political resolution.

This study has identified and measured the comparative importance of factors that place young women at risk of becoming single parents. Our guiding conceptual framework combines economic, sociological, and psychological perspectives on a process first activated when sexual intercourse begins. Using a nationally representative sample of high school sophomores, we have sought to answer two basic questions:

1. What background factors place these young women at risk of becoming single mothers?
2. What other factors can temper that risk?

In addressing the first question, we have to account for the diversity in the individual backgrounds of these young women. Those differing profiles alone place certain ones at substantially higher risk than others. To quantify these background effects, we developed a parenthood risk scale to estimate an "expected" risk based on each individual's race or ethnicity, academic ability, and the socioeconomic status and structure of her parental family.

Certain characteristics are associated with lower than expected rates of single childbearing, and subgroups with those characteristics in effect beat the statistical odds their backgrounds alone foreshadowed. We have grouped these "tempering" influences for purposes of analysis into several domains: (1) various forms of social controls; (2) opportunity costs, indicated here through college plans; (3) personal rejection of childbearing outside of marriage; and (4) the school peer milieu, which may reinforce (or undermine) these other tempering influences. Additionally, we examined how symptoms of the "problem-behavior" constellation affect the propensity to become a single parent.

Before this study, there was not much doubt that all these factors are connected with single teenage childbearing. The unanswered questions pertained to the *strength* of such connections, net of other background differences, and their consistency across different racial or ethnic groups.

Within the realm of social controls, we have found different forms to predominate for blacks, whites, and Hispanics. For blacks, close parental supervision has the strongest influence; for whites, a high-quality relationship with parents is the strongest form. Among Hispanics, religiosity appears to be strongest. This result underlines a persistent theme that surfaced repeatedly in our findings: Teenage women who become single mothers are a highly diverse population; not all are equally responsive to the forms of social control that may stand out as most important in some people's minds.

In the realm of opportunity costs and personal unwillingness to consider single childbearing, our specific results carry a broader message with important policy implications. Where personal motivations exist for *not* getting involved with early unwed childbearing, young women manage not to. This effect is far stronger among blacks than whites. From a policy perspective, these findings suggest that the individual teenager's own awareness and perception of what she would stand to lose by becoming a single mother can act as a powerful deterrent to doing so.

The peer milieu encountered at school emerges as yet another separate domain of influence, but only among whites. This finding further extends our earlier point on diversity, suggesting that school-based interventions may need to be targeted more heavily on peer influences in certain school settings.

The picture to emerge from these results is a composite one made up of several "universal" influences (background factors and social controls) plus other racially and ethnically distinctive ones. Peeling back these layers of separate influence illustrates the complexity of the process that leads to single parenthood. Yet certain similarities across racial or ethnic subgroups in what predicts unwed childbearing are remarkable, given the sizable disparity between black and white childbearing rates. Such findings pose new questions as they answer old ones: We need to understand how young women develop the attitudes and expectations they hold, and how those views hold up against, or are swayed by, those that their friends and school peers hold.

These findings are sure to stimulate vigorous public debate over whose responsibility it should be to activate the complementary influences we have statistically identified. Should parents try to instill abstinence or at least explain contraception? Should they concern

themselves more actively with peer influences encountered at school? Should they demand more of the schools—for example, through school-based clinics?

Such issues return us to the dilemma of achieving consensus on how to reduce single teenage childbearing in a nation where its occurrence is among the highest recorded in the industrial world. Our central finding—that many high-risk young women avoid single childbearing—focuses public debate on devising broadly acceptable strategies for helping them do so.

Appendix A

CONSTRUCTION OF THE ANALYSIS FILE

INTRODUCTION

This appendix provides technical documentation about the analytic file used in this report to enable other researchers to replicate or extend our findings or draw on the logic we developed for constructing specific variables. The file itself, plus documentation, is publicly available from the Data Archive on Adolescent Pregnancy and Pregnancy Prevention, c/o Sociometrics Corporation, 685 High Street (Suite 2E), Palo Alto, CA 94301.

The file was extracted from the *High School and Beyond* 1980 Sophomore Cohort First Follow-up (1982) and merged with several additional variables from the 1980 School File. The data were collected through separate follow-up questionnaires administered to those respondents who were still in school at the follow-up and to those respondents who were no longer in school (including dropouts). The two questionnaires had similar but not always identical questions, and responses for each question were assigned different variable names. The flag variable SOQFLAG indicated which questionnaire was used: If SOQFLAG=1, the respondent was still in school; otherwise she was not.

In what follows, we will refer to each data element in these files using the SPSS (SAS) variable name assigned to it in the *Data File User's Manual* (National Center for Education Statistics, 1983), to which we refer the reader for exact descriptions.

CASES SELECTED

We selected all females who were not mothers at baseline and who responded to both the baseline questionnaire in 1980 and the first follow-up questionnaire in 1982. The resulting file contained 13,061 cases. The SAS statement for selecting them is:

```
IF     SEX=2                          /* Female                 */
  &    SOQFLAG=1 | DOQFLAG=1)         /* Both questionnaires     */
  &    PANELWT>0                      /* Nonzero weight         */
  &    BB036I=1 | BB081B=2) = 0;      /* Not already parent     */
```

NEW VARIABLES

We defined the following additional variables:

Race. A respondent was coded as black, Hispanic, or "other" using the "composite race" variable (RACE=1, 4, anything else, respectively). Whites constituted approximately 94 percent of those classified "other" and are referred to elsewhere in this report simply as "white."

Parenthood status. A follow-up respondent who was still in school was coded as a parent if she reported that she either lived with her own child (FY52I=1) or already had a child (FY97B=2). The same logic was followed for dropouts, using the corresponding variables (FD3I=1 or FD64=1) and (FB71B=2). The distribution of cases by this parenthood status variable is shown in Table 2 in the text.

Clearly, this outcome measure can be no more valid than the responses from which it is constructed. The partial inclusion of adopted, foster, and stepchildren in the definition is undesirable on analytical grounds, but its practical effect is unlikely to distort our findings, given how rarely such circumstances arise among high-school-age women.

Marital status. Respondents were coded as married at baseline if they said so (BB081A=2). For unmarried baseline respondents, those still in school at follow-up were coded as married if they said so (FY97A=2); those no longer in school were coded as married if they either said so (FD71A=2) or had been married 1, 2, or 3 times (1<=FD62<=3).[1] The distribution of cases by this marital variable is shown in Table A.1.

Using the parenthood and marital status variables defined here, we coded as a single parent each respondent who was never married and also was a parent. The distribution of such cases is shown in Table 2.

[1]Another question, asked of both students and dropouts at the follow-up, could have been used to determine the marital status of the respondent. It asked who lived with the respondent at the time of the interview, with one possible response being "my spouse." For a few cases, the answer to this question conflicted with answers to others (e.g., respondents said they lived with their spouse, but failed to respond on another question that they were already married). We decided not to use this question, which may reflect unmarried cohabitation. Had we used it, we would have classified 28 fewer respondents as unwed parents: 2 blacks, 15 Hispanics, 11 whites. We checked these anomalous cases and found them to be scattered fairly randomly among the susceptibility groups.

Table A.1

DISTRIBUTION OF CASES BY MARITAL STATUS AND RACE

Marital Status	Black	Hispanic	White	Total
Ever married at baseline	3	10	9	22
Ever married at followup	24	129	355	508
Never married	1732	2103	8696	12531
Total	1759	2242	9060	13061

We discovered one flaw in our analysis too late to correct. We inadvertently failed to exclude from the analysis file the 22 cases in which the respondent was already married at baseline. These 22 cases could not have become single unwed parents at follow-up under our definition. Thus, had we excluded them, the number of respondents "at risk" would have been reduced from 13,061 cases to 13,039 cases, and the resulting fraction who became single parents would have been minutely larger. Since these 22 cases represent less than 0.2 percent of all 13,061 cases, their exclusion would not have affected our results to any measurable degree; accordingly, we decided not to undertake a costly regeneration of all results.

Appendix B

CONTROLLING FOR BACKGROUND AND ABILITY DIFFERENCES AMONG INDIVIDUALS

INTRODUCTION

This appendix explains the rationale and procedures used to construct the parenthood-risk scale referred to in Sec. IV. Other researchers may find this scale (or variants on it) useful in replicating or extending our findings, or for controlling on background differences to study other outcomes with *HS&B*.

The scale has three components: socioeconomic status (SES), academic ability, and family structure. Below, we describe each component and explain how the three were combined into a single scale.

SOCIOECONOMIC STATUS

HS&B provides a standardized composite SAS variable (BYSES), having mean 0 and standard deviation 1 over the entire population. Table B.1 shows its quartiles for females in the sophomore cohort, by race.

Table B.1

QUANTILES OF SOCIOECONOMIC STATUS, BY RACE

Race	Percent Missing	Lower Quartile	Median	Upper Quartile
Black	11.8	−1.023	−0.558	−0.045
Hispanic	5.9	−0.952	−0.503	0.026
White	2.2	−0.457	−0.017	0.505

For cases with missing values of BYSES, we imputed SES from other information available from *HS&B*'s survey of school principals, who were asked what percentage of their school's population was "disadvantaged" (Variable SB037). Table B.2 shows the quantiles of this variable over the cases where BYSES was missing.

Table B.2

QUANTILES OF PERCENT DISADVANTAGED, BY RACE, RESTRICTED TO CASES WITH MISSING SES

Race	Lower Quartile	Median	Upper Quartile
Black	11	30	75
Hispanic	10	30	65
White	2	8	20

We grouped respondents separately by race into low, middle, and high parenthood risk groups, corresponding to using the upper quartile, median, and lower quartile, respectively, for the socioeconomic status variable BYSES. When BYSES was missing, we used corresponding quartiles for percent disadvantaged (if that variable was present). Thus, we defined three SES background groups:

Low risk group = Upper SES quartile (or lower percent-disadvantaged quartile if BYSES missing)

Middle risk group = Middle two SES quartiles (or middle two percent-disadvantaged quartiles if BYSES missing)

High risk group = Lower SES quartile (or upper percent-disadvantaged quartile if BYSES missing)

Table B.3 shows the actual number of cases, and the weighted percent who were single parents at follow-up, by race and SES. As can be seen, the estimated probability of becoming a single parent depends strongly on SES. (These estimates are also displayed in Fig. 3.)

The above procedure leaves few missing cases (where both BYSES and SB037 were missing, as shown in Table B.3). For blacks, there is evidence that those missing cases are disproportionately single mothers.

Table B.3

NUMBER OF CASES AND PERCENT UNWED PARENTS, BY RACE AND SES RISK GROUP

SES Risk Group	Black		Hispanic		White	
	No.	%	No.	%	No.	%
Low risk	472	7.0	521	2.7	2376	0.8
Middle risk	882	10.3	1098	4.5	4483	1.3
High risk	381	19.8	606	8.2	2178	2.0
Missing	24	45.5	17	1.9	23	0.0

ACADEMIC ABILITY

Scores on standardized tests, administered in conjunction with *HS&B*, were recorded in three variables: YBVOCBSD (vocabulary), YBREADSD (reading), and YBMTH1SD (mathematics). We defined a summary measure of academic ability ("ABLE"), equal to the average of these three test scores if none was missing, the average of the two remaining if exactly one was missing, or the single one remaining if two were missing. If all three were missing, ABLE is undefined and therefore missing. Table B.4 shows its quartiles, by race.

Table B.4

QUANTILES OF ACADEMIC ABILITY (ABLE), BY RACE

Race	Percent Missing	Lower Quartile	Median	Upper Quartile
Black	10.8	38.4	41.6	47.1
Hispanic	11.1	38.9	42.6	48.0
Other	5.8	45.0	51.4	57.8

To impute values for missing cases, we relied on two items from the principal's questionnaire, which we assume to be at least weakly related to ability: the percent of the 10th grade class taking remedial mathematics (SB021) and the percent taking remedial reading (SB022). We took the average of these two variables (or used the one remaining if exactly one was missing). Table B.5 shows the quantiles of this average over the cases where ABLE was missing.

Table B.5

QUANTILES OF AVERAGE REMEDIAL PERCENTAGES RESTRICTED TO CASES WITH ABLE MISSING

Race	Lower Quartile	Median	Upper Quartile
Black	3.5	12	33
Hispanic	5.0	10	20
White	1.5	6	12

As with SES, we grouped respondent (separately by race) into low, middle, and high parenthood risk groups, corresponding to the upper quartile, median, and lower quartile of ABLE (or, where ABLE was missing, to the corresponding quartiles of the remedial percentages).

Low risk group = Upper ability quartile (or lower percent remedial quartile if ABLE missing)

Middle risk group = Middle ABLE half (or middle half percent remedial quartile if ABLE missing)

Upper risk group = Lower ABLE quartile (or upper percent remedial quartile if ABLE missing)

Table B.6 shows the actual number of cases, and the weighted percent who were single parents at follow-up, by race and ability. (These estimates are also displayed in Fig. 3.) Again, for blacks, those missing cases are disproportionately single mothers.

Table B.6

NUMBER OF CASES AND PERCENT UNWED PARENTS, BY RACE AND ABILITY RISK GROUP

Ability Risk Group	Black		Hispanic		White	
	No.	%	No.	%	No.	%
Low risk	404	7.5	577	3.2	2380	0.8
Middle risk	812	12.6	1042	3.5	4436	0.8
High risk	349	14.7	511	9.5	2121	3.0
Missing	24	31.9	36	4.7	27	0.0

FAMILY

To classify the structure of the respondent's family at baseline, we defined a variable ("FAMILY"), whose construction logic is displayed in Table B.7 using variable BBO36.

Preliminary analysis (not reported here) indicated that black and Hispanic respondents from female-headed families, and also those few respondents whose family structure was classified "other," were somewhat more likely to become single mothers. Therefore, we defined a dummy variable ("FEMHEAD") equal to 1 if the respondent came from a family coded as either "other" or (if she was black or Hispanic) as female-headed. Table B.8 shows the actual number of cases and the weighted estimate of the percent who were single parents at follow-up.

Table B.7

DEFINITION OF BASELINE FAMILY STRUCTURE

Lives with Mother?	Lives with Father?	Lives with Stepmother?	Lives with Stepfather?	Lives with Grandparent?	Family Structure Defined as:
Yes	Yes				Nuclear
Yes	No				Female-headed
No	Yes	Yes			Step-parent
No	Yes	No			Father only
No	No	Yes	Yes		Step-parent
No	No	Yes	No		Female-headed
No	No	No	Yes		Step-parent
No	No	No	No	Yes	Step-parent
No	No	No	No	No	Other

Table B.8

NUMBER OF CASES AND PERCENT UNWED PARENTS, BY RACE AND FEMHEAD

Family Structure	Black		Hispanic		White	
	No.	%	No.	%	No.	%
FEMHEAD 1	698	18.9	425	11.1	66	2.3
FEMHEAD 0	1061	7.7	1817	3.4	8994	1.3

CONSTRUCTION OF THREE-FACTOR SCALE

Each of the above three background factors—socioeconomic status, academic ability, and family structure—distinguish single mothers-to-be within the sample. Plainly, these three factors are not mutually independent; yet, no one of them can substitute for another. At each SES level, for example, there are high- as well as low-ability individuals.

We combine SES with academic ability by assigning each higher-risk group (the lower-SES quartile and the lower-ability quartile) a positive unit weight, and each lower-risk group (the higher-SES quartile and the higher-ability quartile) a negative unit weight. Next, we adjust the sum of these weights for family structure by adding a unit weight for black and Hispanic respondents who are in female-headed families, or for any respondents who are in an "other" type of family, regardless of race (the value assigned to FEMHEAD).

This definition produces the integer-valued risk scale shown in Table B.9. The scale is coded "missing" if either socioeconomic status, academic ability, or family structure is missing; otherwise it ranges from a low of −2 (for individuals who are in the upper-SES quartile and the upper-ability quartile and are not in a female-headed or "other" family) to a high of +3 (for individuals who are in the lower-SES quartile and the lower-ability quartile and are either in a female-headed black or Hispanic family or in an "other" type of family). Table B.9 displays the relation between this scale and the probability of becoming a single parent. Again, note that for blacks, missing cases are disproportionately single mothers; the number of such cases, however, is sufficiently small not to be a source of concern.

Table B.9

NUMBER OF CASES AND PERCENT SINGLE PARENTS, BY RACE AND PARENTHOOD RISK SCALE

Parenthood Risk Scale	Black		Hispanic		White	
	No.	%	No.	%	No.	%
−2	122	4.2	215	1.1	1070	0.1
−1	342	7.2	445	1.4	2128	0.8
0	486	7.2	622	5.1	2887	1.4
1	455	11.9	569	4.4	1974	1.5
2	236	24.0	277	12.1	9344	3.0
3	65	23.3	61	16.1	18	6.7
Missing	53	34.7	53	3.8	49	0.0

Appendix C

DERIVATION OF OTHER VARIABLES

INTRODUCTION

This appendix explains the rationale and procedures used to construct independent variables developed in the course of this analysis. Other researchers may find these variables (or variants on them) useful in replicating or extending our findings, or for other research applications.

MEASURES OF PARENT-CHILD RELATIONSHIP

We defined four dummy variables, each measuring a particular facet of the respondent's reported relationship with her parents. The variable TALK indicates whether the respondent talked with her mother or father about personal experiences, either "once or twice a week" or "every day or almost every day" (BB047G=3 or 4). The variable PLAN indicates whether the respondent talked to her father or mother "a great deal" about planning her school program (YB049A=3 or YB049B=3). The variable TRACKS indicates whether the respondent's mother or father kept "close track of how well" the respondent was doing in school (BB046A=1 or BB046B=1). The variable KNOW indicates whether the respondent's parents always knew where the respondent was and what she was doing (BB046C=1).

We performed a factor analysis on these four indicator variables, fixing the number of factors at 2 and using varimax rotation. Loadings of these four indicators on the two rotated factors were:

	Black		Hispanic		White	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
PLAN	0.80	0.18	0.76	0.17	0.78	0.15
TALK	0.84	0.05	0.81	0.04	0.82	0.06
MONITOR	0.21	0.72	0.23	0.71	0.16	0.75
KNOW	0.02	0.82	−0.01	0.84	0.04	0.81

These results suggest that the four indicator variables can safely be regarded as representing two independent dimensions of parental relationships, a "talk/plan" relationship and a "monitor/know" relationship. Accordingly, we constructed a single variable representing each of these two dimensions.

To represent the first, a new composite variable TALKS was set equal to 1 if BB047G≥3 or YB049A=3 or YB049B=3 (meaning the respondent often talked or planned her school program with her parents). Otherwise, TALKS was set equal to 2 if BB047G=2 or YB049A=2 or BY049B=2 (meaning the respondent sometimes talked or planned her school program with her parents); or equal to 3 if BB047G=1 or YB049A=1 or YB049B=1 (meaning the respondent seldom talked or planned her school program with her parents).

To represent the second dimension, the variable TRACKS was set equal to 1 if BB046C=1 and either BB046A=1 or BB046B=1 (meaning the respondent felt closely supervised by her parents). Otherwise, TRACKS was set equal to 2 if either BB046A=1 or BB046B=1 or BB046C=1 (meaning the respondent felt moderately supervised by her parents), or equal to 3 if BB046A=2 or BB046B=2 or BB046C=2 (meaning the respondent felt minimally supervised by her parents).

SOCIAL CONTROLS

Our social controls index is composed of three factors that our analysis identified as reducing the risk of single parenthood: (1) TALKS (indicative of a high-quality relationship with parents), (2) TRACKS (indicating close parental supervision), and (3) deep religious belief. Analyzed individually, these factors emerged with varying degrees of strength for each race or ethnic group. To make generalization feasible, we analyzed how their cumulative presence diminished the incidence of single parenthood, regardless of which particular combination of social controls is present for a given individual. Our premise here is that social controls that discourage single childbearing may derive from alternative sources (parents, church, peers) and may reinforce one another. Accordingly, we used indicator (dummy) variables as proxies for the following factors:

Indicator	Definition
Talks a lot with parents	TALKS = 1
Feels closely supervised by parents	TRACKS = 1
Feels deeply religious	BB093 = 1

Table C.1 shows the weighted percent who were single parents at follow-up, by race, for each indicator variable. These three factors have been aggregated to form a Missing Controls index equal to the number of factors missing (which can range from 0 to 3). For example, an individual who talks a lot with parents and is deeply religious, but does not feel closely supervised, receives an index value of 1. As seen in Table C.2, the percent who became single parents declines consistently as the Missing Controls index declines.

Table C.1

NUMBER OF CASES AND PERCENT UNWED PARENTS, BY RACE AND INDICATORS OF SOCIAL CONTROLS

Social Controls Risk Group	Black		Hispanic		White	
	%	No.	%	No.	%	No.
All Cases	11.58	1706	4.97	2189	1.33	9011
Talks						
High	14.09	611	6.48	854	2.62	3099
Low	10.02	1095	3.99	1335	0.61	5912
Tracks						
High	16.66	445	7.19	483	1.89	1875
Low	9.52	1261	4.20	1706	1.17	7136
Devout						
High	11.93	1526	5.38	1919	1.45	7836
Low	8.31	180	1.87	270	0.46	1175

Table C.2

NUMBER OF CASES AND PERCENT UNWED PARENTS, BY RACE AND MISSING CONTROLS INDEX

Missing Controls Index	Black		Hispanic		White	
	%	No.	%	No.	%	No.
All Cases	11.58	1706	4.97	2189	1.33	9011
Index						
3	16.65	229	8.45	269	3.54	967
2	14.48	522	6.14	701	1.61	2709
1	8.55	851	3.40	1047	0.82	4491
0	6.78	104	2.94	172	0.26	844
Indicator						
≥2	15.20	751	6.86	970	2.13	3676
<2	8.37	955	3.43	1219	0.73	5335

For multivariate analysis, this index was transformed into an indicator variable equal to 1 if and only if two or three of the social control factors are absent. The effect of this variable, also shown in Table C.2, is strong and consistent.

BEST FRIEND

We defined four dummy variables that described the respondent's best friend. The variable GRADES indicated that her best friend gets good grades (BB051A=1). The variable LIKESIT indicated that her best friend "is interested in school" (BB051B=1). The variable ATTENDS indicated that her best friend "attends classes regularly" (BB051C=1). Finally the variable COLLEGE indicated that her best friend "plans to go to college" (BB051D=1). A factor analysis revealed that for all three racial groups, the largest eigenvalue was approximately 2.1, while the next largest eigenvalue was approximately 0.75, about 35 percent of the largest. This finding suggests that all four variables capture a single dimension, apparently the best friend's academic orientation. Accordingly, we selected COLLEGE as the proxy variable for this dimension, given its face validity for that purpose.

PROBLEM BEHAVIOR

We defined three dummy variables that indicated specific self-reported "problem behaviors" corresponding to psychological research on this point: (1) whether the respondent had "disciplinary problems in school during the last year" (BB059B=1); (2) whether she cut classes "every once in a while" (BB059E=1); and (3) whether she was frequently absent from school for reasons other than illness ($3 \leq$BB016≤ 7). Few respondents reported all three behaviors; accordingly, we grouped respondents into those reporting 2 or more ("high"), exactly 1 ("middle"), and none ("low").

OPPORTUNITY COSTS

Our opportunity-costs scale is composed of two elements: (1) an indicator that the respondent expected to pursue at least 2 years of college or beyond ($6 \leq$BB065≤ 9); and (2) an indicator that the respondent planned "to go to college at some time in the future" ($1 \leq$BB115≤ 3). The scale is simply the sum of these two indicators, which ranges from 0 (low opportunity cost) to 2 (high opportunity cost).

REFERENCES

Abelson, R. P., "Psychological Implication," in R. P. Abelson, E. Aronson, W. J. McGuire, T. M. Newcome, M. J. Rosenberg, and P. J. Tannenbaum (eds.), *Theories of Cognitive Consistency: A Source Book*, Rand McNally, Chicago, 1968, pp. 112–139.

Bianchi, Suzanne, and Daphne Spain, *American Women in Transition*, Russell Sage, New York, 1986.

Billy, John O. G., Joseph L. Rodgers, and J. Richard Udry, "Adolescent Sexual Behavior and Friendship Choice," *Social Forces* 62(3), 1984, pp. 653–678.

Billy, John O. G., and J. Richard Udry, "The Effects of Age and Pubertal Development on Adolescent Sexual Behavior," University of North Carolina, January 1983.

Billy, John O. G., and J. Richard Udry, "The Influence of Male and Female Best Friends on Adolescent Sexual Behavior," *Adolescence*, Vol. 20, No. 77, Spring 1985a, pp. 21–32.

Billy, John O. G., and J. Richard Udry, "Patterns of Adolescent Friendship and Effects on Sexual Behavior," *Social Psychology Quarterly*, 48(1), 1985b, pp. 27–41.

Burt, Martha R., "Estimating the Public Costs of Teenage Childbearing," *Family Planning Perspectives*, Vol. 18, No. 5, September/October 1986, pp. 221–226.

Burt, Martha R., and Frank Levy, "Estimates of Public Costs for Teenage Childbearing: A Review of Recent Studies and Estimates of 1985 Public Costs," *National Academy of Sciences*, Vol. II, Ch. 10, 1987.

Crosbie, P. V., and D. Bitte, "A Test of Luker's Theory of Contraceptive Risk-Taking," *Studies in Family Planning*, Vol. 13, No. 3, 1982, pp. 67–78.

Cvetkovich, George, and Barbara Grote, "Psychosocial Maturity and Teenage Contraceptive Use: An Investigation of Decision-Making and Communication Skills," *Population and Environment*, Vol. 4, No. 4, Winter 1981, pp. 211-226.

Cvetkovich, George et al., "On the Psychology of Adolescents' Use of Contraceptives," *Journal of Sex Research*, Vol. 11, No. 3, 1975, pp. 256–270.

Darabi, Katherine F., and Vilma Ortiz, "Childbearing Among Young Latino Women in the United States," *American Journal of Public Health*, Vol. 77, No. 1, January 1987, pp. 25–28.

Davis, Kingsley, and Judith Blake, "Social Structure and Fertility: An Analytic Framework," *Economic Development and Cultural Change*, Vol. 4, No. 3, April 1956, pp. 211–235.

Dawson, Deborah Anne, "The Effects of Sex Education on Adolescent Behavior," *Family Planning Perspectives*, Vol. 18, No. 4, July/August 1986, pp. 162–170.

Demographic and Behavioral Sciences Branch, *Report to the NACHHD Council*, issued by National Institute of Child Health and Human Development, Bethesda, MD, June 1986.

Devaney, Barbara L., and Katherine S. Hubley, *The Determinants of Adolescent Pregnancy and Childbearing*, Final Report by Mathematics Policy Research, Inc. on Contract No. N01-HD82841 to the Department of Health and Human Services, 1981.

Eisen, Marvin, Cathy A. Donald, John E. Ware, Jr., Robert H. Brook, *Conceptualization and Measurement of Health for Children in the Health Insurance Study*, The RAND Corporation, R-2313-HEW, May 1980.

Evans, J., G. Selstad, and W. Welcher, "Teenagers: Fertility Control Behavior and Attitudes," *Family Planning Perspectives*, Vol. 8, 1976, pp. 192–200.

Fischman, S., "Delivery or Abortion in Inner-City Adolescents," *American Journal of Orthopsychiatry*, Vol. 47, 1977, pp. 127–133.

Foreit, J. R., and K. G. Foreit, "Risk-Taking and Contraceptive Behavior among Unmarried College Students," *Population and Environment*, Vol. 4, No. 3, Fall 1981, pp. 174–188.

Fox, Greer Litton, and Judith Inazu, "Patterns and Outcomes of Mother-Daughter Communication about Sexuality," *Journal of Social Issues*, Vol. 36, 1980, pp. 7–29.

Friede, Andrew, Carol J. R. Hogue, Lee Doyle, Charles R. Hammerslough, Joseph E. Sniezek, and Henry Arrighi, "Do the Sisters of Childbearing Teenagers Have Increased Rates of Childbearing?" *American Journal of Public Health*, 76(10), October 1986, pp. 1221–1224.

Furstenberg, Frank, Jr., *Unplanned Parenthood: The Social Consequences of Teenage Childbearing*, Free Press, New York, 1976.

Furstenberg, Frank, Jr., et al., "Contraceptive Continuation Among Adolescents Attending Family Planning Clinics," *Family Planning Perspectives*, Vol. 15, No. 5, September/October 1983.

Furstenberg, Frank F., Jr., J. Brooks-Gunn, and S. Philip Morgan, *Adolescent Mothers in Later Life*, Cambridge University Press, New York, 1987.

Furstenberg, Frank, Jr., Roberta Herceg-Baron, Judy Shea, and David Webb, "Family Communication and Teenagers' Contraceptive Use," *Family Planning Perspectives*, Vol. 16, No. 4, July/August 1984, pp. 163–170.

Furstenberg, Frank F., Jr., S. Philip Morgan, Kristin A. Moore, and James L. Peterson, "Race Differences in the Timing of Adolescent Intercourse," *American Sociological Review*, 52, August 1987, pp. 511–518.

Hanson, Sandra L., David E. Myers, and Alan L. Ginsburg, "The Role of Responsibility and Knowledge in Reducing Teenage Out-of-Wedlock Childbearing," *Journal of Marriage and the Family*, 49, May 1987, pp. 241–256.

Harris, Louis, and Associates Inc., *Public Attitudes about Sex Education, Family Planning and Abortion in the United States*, Study No. 854005, New York, 1985.

Hayes, Cheryl D. (ed.), *Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing*, Vol. I, National Academy Press, Washington, D.C., 1987.

Henshaw, Stanley, Jacqueline D. Forrest, Ellen Sullivan, and Christopher Tietze, "Abortion in the United States, 1978–1979," *Family Planning Perspectives*, Vol. 13, No. 1, January/February 1981, pp. 6–18.

Hofferth, Sandra L., "Factors Affecting Initiation of Sexual Intercourse," in Sandra L. Hofferth and Cheryl D. Hayes (eds.), *Risking the Future. Vol. II: Working Papers and Statistical Appendixes*, National Academy Press, Washington, D.C., 1987.

Hofferth, Sandra L., Joan R. Kahn, and Wendy Baldwin, "Premarital Sexual Activity Among U.S. Teenage Women Over the Last Three Decades," *Family Planning Perspectives*, Vol. 19, No. 2, March/April 1987, pp. 46–53.

Hofferth, Sandra L., and Kristin A. Moore, "Early Childbearing and Later Economic Well-Being," *American Sociological Review*, Vol. 44, October, 1979, pp. 784–815.

Hogan, Dennis P., and E. M. Kitagawa, "The Impact of Social Status, Family Structure, and Neighborhood on the Fertility of Black Adolescents," *American Journal of Sociology*, Vol. 90, No. 4, 1985, pp. 825–855.

Hogan, Dennis P., "The Variable Order of Events in the Life Course," *American Sociological Review*, Vol. 43, 1978, pp. 573–586.

Inazu, Judith, and Greer Litton Fox, "Maternal Influence on the Sexual Behavior of Teenage Daughters," *Journal of Family Issues*, Vol. 1, 1980, pp. 81–102.

Jessor, Richard, and Shirley L. Jessor, *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*, Academic Press, New York, 1977.

Jessor, Shirley L., and Richard Jessor, "Transition from Virginity to Nonvirginity Among Youth: A Social Psychological Study Over Time," *Developmental Psychology*, Vol. 11, No. 4, 1975, pp. 473–484.

Jones, Elise F. et al., "Teenage Pregnancy in Developed Countries: Determinants and Policy Implications," *Family Planning Perspectives*, 17(2), March/April 1985, pp. 53–63.

Jones, Jo Ann et al., "Nonmarital Childbearing: Divergent Legal and Social Concerns," *Population and Development Review*, 11((4), December 1985, pp. 677–693.

Kisker, Ellen Eliason, "Teenagers Talk About Sex, Pregnancy and Contraception," *Family Planning Perspective*, Vol. 17, No. 2, 1985, 1985, pp. 83–90.

Klein, L., "Antecedents to Teenage Pregnancy," *Clinical Obstetrics and Gynecology*, Vol. 32, 1978, pp. 1151–1159.

Kohlberg, L., "Stage and Sequence: The Cognitive-Developmental Approach to Socialization," in D. Goslin (ed.), *Handbook of Socialization Theory and Research*, Rand McNally, Chicago, 1969, pp. 347–480.

Kohlberg, L., and E. Zigler, "The Impact of Cognitive Maturity on the Development of Sex-Role Attitudes," *Genetic Psychology Monographs*, Vol. 75, 1967, pp. 89–165.

Leibowitz, Arleen, Marvin Eisen, and Winston Chow, "An Economic Model of Teenage Pregnancy Decision-making," *Demography*, Vol. 23, No. 1, 1986, pp. 67-77.

Luker, K., *Taking Chances: Abortion and the Decision Not to Contracept*, University of California Press, Berkeley, 1975.

Lundy, J. R., "Some Personality Correlates of Contraceptive Use Among Unmarried Female College Students," *The Journal of Psychology*, Vol. 80, pp. 9–14, 1972.

MacDonald, A. P., "Internal-External Locus of Control and the Practice of Birth Control," *Psychological Reports*, Vol. 27, 1970, p. 206.

Marini, M., "The Transition to Adulthood: Sex Differences in Educational Attainment and Age at Marriage," *American Sociological Review*, Vol. 43, 1978, pp. 483–507.

Marsiglio, William, and Frank L. Mott, "The Impact of Sex Education on Sexual Activity, Contraceptive Use and Premarital Pregnancy Among American Teenagers," *Family Planning Perspectives*, Vol. 18, No. 4, July/August, 1986, pp. 151–162.

McKinney, Kathleen, Susan Sprecher, and John DeLamater, "Self Images and Contraceptive Behavior," *Basic and Applied Social Psychology*, Vol. 5 (1), 1984, pp. 37–57.

Michael, Robert T., and Nancy Brandon Tuma, "Entry into Marriage and Parenthood by Young Men and Women: The Influence of Family Background," *Demography*, Vol. 22, No. 4, November 1985, pp. 515–54.

Micklin, Michael, "Adolescent Socialization and Heterosexual Behavior," Presentation at the NICHD Contractor/Grantee Workshop on Adolescent Pregnancy and Childbearing, Bethesda, MD, June 1981.

Moore, Kristin A., and Martha R. Burt, *Private Crisis, Public Cost: Policy Perspectives on Teenage Childbearing*, Urban Institute Press, Washington, D.C., 1982.

Moore, Kristin A., and Steven B. Caldwell, "Out-of-Wedlock Pregnancy and Childbearing," Final Report on Grant No. 014B-7502-P2021 from the Department of Health, Education, and Welfare, September 1976.

Moore, Kristin A., and Steven B. Caldwell, "The Effect of Government Policies on Out-of-Wedlock Sex and Pregnancy," *Family Planning Perspectives*, Vol. 9, No. 4, July/August 1977, pp. 164–168.

Moore, Kristin A., James L. Peterson, and Frank F. Furstenberg, Jr., "Starting Early: The Antecedents of Early, Premarital Intercourse," revised version of a paper presented at the meetings of the Population Association of America, Minneapolis, May 1984.

Moore, Kristin A., Margaret C. Simms, and Charles L. Betsey, *Choice and Circumstance: Racial Differences in Adolescent Sexuality and Fertility*, Transaction Books, New Brunswick, 1986.

Morris, Naomi, Katherine Mallin, and J. Richard Udry, "Pubertal Development and Current Sexual Intercourse among Teenagers," paper presented at the annual meeting of the American Public Health Association, Montreal, November 1982.

Morrison, Diane M., "Adolescent Contraceptive Behavior: A Review," *Psychological Bulletin*, 98(3), 1985, pp. 538–568.

Mosher, William D., and Christine A. Bachrach, "First Premarital Contraceptive Use: United States, 1960–82," *Studies in Family Planning*, 18(2), March/April 1987, pp. 83–95.

Mott, Frank L., with P. Baker, R. J. Haurin, and W. Marsiglio, "Fertility-Related Data in the 1982 National Longitudinal Survey of Work Experience of Youth: An Evaluation of Data Quality and Some Preliminary Analytic Results," Center for Human Resource Research, Ohio State University, Columbus, December 1983.

Mott, Frank L., and R. Jean Haurin, "The Interrelatedness of Age at First Intercourse, Early Pregnancy, Alcohol, and Drug Use Among American Adolescents: Preliminary Results from the National Longitudinal Survey of Youth Labor Market Experience," paper presented at the annual Population Association of America Meetings, 1987.

National Academy of Sciences, *Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing*, two volumes, National Academy Press, Washington, D.C., 1987.

National Center for Education Statistics, "High School & Beyond: 1987 Sophomore Cohort: First Follow-Up" (1982), *Data File Users Manual*. U.S. Department of Education, Washington, D.C., April 1983.

National Center for Health Statistics (NCHS). *Advance Report on Final Natality Statistics, 1982. Monthly Vital Statistics Report*, Vol. 33, No. 6, Supplement, September 28, 1984.

Newcomer, Susan F., and J. Richard Udry, "Parent-Child Communication and Adolescent Sexual Behavior," *Family Planning Perspectives*, Vol. 17, No. 4, July/August 1985, pp. 169–174.

——, "Parental Marital Status Effects on Adolescent Sexual Behavior," *Journal of Marriage and the Family*, 49, May 1987, pp. 235–240.

——, "Mothers' Influence on the Sexual Behavior of Their Teenage Children," *Journal of Marriage and the Family*, Vol. 46, No. 2, May 1984, pp. 477–485.

O'Connell, Martin, and Maurice J. Moore, "The Legitimacy Status of First Births to U.S. Women Aged 15–24, 1939–1978," *Family Planning Perspectives*, Vol. 12, No. 1, Jan/Feb. 1980, pp. 16-20.

Orr, Margaret Terry, "Private Physicians and the Provision of Contraceptives to Adolescents," *Family Planning Perspectives*, Vol. 16, No. 2, March/April 1984, pp. 83–86.

Peacock, Nancy, "Contraceptive Decision-Making Among Adolescent Girls," *Journal of Sex Education and Therapy*, Vol. 8, No. 2, Fall 1982, pp. 31–34.

Philliber, S., P. K. Namerow, J. W. Kaye, and C. H. Kunkes, "Pregnancy Risk Taking Among Adolescents," paper presented at the meetings of the Population Association of America, Minneapolis, May 1984.

Piaget, J., "Intellectual Evolution from Adolescence to Adulthood," *Human Development*, Vol. 15, 1972, pp. 1–12.

Pratt, William F. et al., "Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III," *Population Bulletin*, Vol. 39, No. 5, December 1984.

Rivara, Frederick P., Patrick J. Sweeney, and Brady F. Henderson, "Risk of Fatherhood Among Black Teenage Males," *American Journal of Public Health*, Vol. 77, No. 2, February 1987, pp. 203–205.

Rosenthal, M. B., and E. Rothchild, "Some Psychological Considerations in Adolescent Pregnancy and Abortion," *Advances in Planned Parenthood*, Vol. 9, 1975, pp. 60–69.

Scales, Peter, "Sex Education and the Prevention of Teenage Pregnancy: An Overview of Policies and Programs in the United States," in Theodora Ooms (ed.), *Teenage Pregnancy in a Family Context*, Temple University Press, Philadelphia, 1981.

Shaffer, D., A. Pettigrew, S. Wolkind, and E. Zajecek, "Psychiatric Aspects of Pregnancy in Schoolgirls: A Review," *Psychological Medicine*, Vol. 8, 1978, pp. 119–130.

Smith, Edward A., and J. Richard Udry, "Coital and Non-Coital Sexual Behaviors of White and Black Adolescents," *American Journal of Public Health* 75(10), 1985, pp. 1200–1203.

Smith, Edward A., J. Richard Udry, and Naomi Morris, "Pubertal Development and Friends: A Biosocial Explanation of Adolescent Sexual Behavior," *Journal of Health and Social Behavior*, Vol. 26, 1985, pp. 183–192.

Studer, Marlena, and Arland Thornton, "Adolescent Religiosity and Contraceptive Usage," *Journal of Marriage and the Family*, Vol. 49, February 1987, pp. 117–128.

Torres, Aida, and Susheela Singh, "Contraceptive Practive Among Hispanic Adolescents," *Family Planning Perspectives*, Vol. 18, No. 4, July/August 1986, pp. 193–194.

Trussell, James T., and J. Menken, "Early Childbearing and Subsequent Fertility," *Family Planning Perspectives*, No. 10, 1978, pp. 209–218.

Udry, J. Richard, John O. G. Billy, Naomi M. Morris, and Terry R. Groff, "Serum Androgenic Hormones Motivate Sexual Behavior in Adolescent Boys," *Fertility and Sterility*, Vol. 43, No. 1, 1985, pp. 90–94.

Waite, Linda J., and Glenna D. Spitze, "Young Women's Transition to Marriage," *Demography*, Vol. 18, No. 4, November 1981, pp. 681–694.

Weinstein, Maxine, and Arland Thornton, "Mother-Child Relations and Adolescent Sexual Attitudes and Behavior," paper presented at the annual meetings of the Population Association of America, Chicago, 1987.

Whitley, Bernard E., Jr., and Janet Ward Schofield, "A Meta-Analysis of Research on Adolescent Contraceptive Use," *Population and Environment* 8 (3 & 4), Fall/Winter 1986.

Wilson, James Q., and Richard J. Herrnstein, *Crime and Human Nature*, Simon & Schuster, New York, 1986.

Zabin, Laurie Schwab, and Samuel D. Clark, Jr., "Institutional Factors Affecting Teenagers' Choice and Reasons for Delay in Attending a Family Planning Clinic," *Family Planning Perspectives*, Vol. 15, No. 1, January/February 1983, pp. 25–29.

Zabin, Laurie S., Janet B. Hardy, Edward A. Smith, and Marilyn B. Hirsch, "Substance Abuse and its Relation to Sexual Activity Among Inner-City Adolescents," *Journal of Adolescent Health Care*, Vol. 7, 1986, pp. 320–331.

Zabin, Laurie S., Marilyn B. Hirsch, Edward A. Smith, Rosalie Streett, and Janet B. Hardy, "Evaluation of a Pregnancy Prevention Program for Urban Teenagers," *Family Planning Perspectives*, Vol. 18, No. 3, 1986, pp. 119–126.

Zabin, Laurie Schwab, John F. Kantner, and Melvin Zelnik, "The Risk of Adolescent Pregnancy in the First Months of Intercourse," *Family Planning Perspectives*, Vol. 11, No. 4, July/August 1979.

Zabin, Laurie S., Edward A. Smith, Marilyn B. Hirsch, and Janet B. Hardy, "Ages of Physical Maturation and First Intercourse in Black Teenage Males and Females," *Demography*, Vol. 23, No. 4, November 1986, pp. 595–605.

Zellman, Gail, *The Response of the Schools to Teenage Pregnancy and Parenthood*, The RAND Corporation, R-2759-NIE, 1981.

Zelnik, Melvin, and John F. Kantner, "Sexual Activity, Contraceptive Use, and Pregnancy Among Metropolitan-Area Teenagers: 1971–1979," *Family Planning Perspectives*, Vol 12, No. 5, September/October 1980, pp. 230–237.

Zelnik, Melvin, John F. Kantner, and Kathleen Ford, *Sex and Pregnancy in Adolescence*, Sage Publications, Beverly Hills, 1981.

Zelnik, Melvin, Michael A. Koenig, and Young J. Kim, "Sources of Prescription Contraceptives and Subsequent Pregnancy Among Young Women," *Family Planning Perspectives*, Vol. 16, No. 1, January/February 1984, pp. 6–13.

Zelnik, Melvin, and Young J. Kim, "Sex Education and its Association with Teenage Sexual Activity, Pregnancy, and Contraceptive Use," *Family Planning Perspectives*, Vol. 14, No. 3, May/June 1982, pp. 117–126.

Zelnik, Melvin, and Farida K. Shah, "First Intercourse Among Young Americans," *Family Planning Perspectives*, Vol. 15, No. 2, March/April 1983, pp. 64–70.